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EDUCATIONAL RESOURCES IN PRESCHOOL EDUCATION

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Abstract: *The research aimed to identify and analyze the educational resources used by preschool teachers and to assess the usefulness of employing information technologies in the teaching process with preschoolers. The research subjects were preschool teachers, who were investigated through a questionnaire specially developed and validated for this study. Most preschool teachers use charts as teaching materials (M-4.69, SD-.62), followed by the magnetic board (M-4.29, SD-.92), and only in third place do they choose a technological tool—namely, the laptop/computer (M-3.91, SD-1.27). The most frequently used information technology teaching tool employed by preschool teachers is the laptop/computer (M-4.14, SD-.92), followed by educational platforms (M-3.62, SD-1.27) and educational software (M-3.44, SD-1.43). Regarding the usefulness of employing information technologies in the educational process with preschoolers, respondents believe that these primarily serve to facilitate and deepen knowledge (M-9.26, SD-.90), to develop and strengthen skills and abilities (M-9.19, SD-.99), as well as to support thinking operations (M-8.85, SD-1.19).*

Keywords: *educational resources; information technologies; preschool teachers.*

Introduction

Education specialists give great importance to the preschool stage, considering it a decisive stage in a child's development. However, to achieve the purpose of this process, well-planned educational programs are necessary (Burgul & Yağan, 2009). As the demand to incorporate educational technologies into teaching curricula increases, there is a growing need for teachers to cultivate the essential competencies and skills required for the effective integration of technology into their teaching methods (Smiling & Hollebrands, 2025). Teaching materials have evolved due to technological advancements that have made them more accessible. Current debates address issues such as the content,

consumption, and production of materials; their role in children's learning and teachers' professional development; the value of global versus local materials; and ideological representation in textbooks (Norton, 2025).

Background

Early childhood education has a tremendous impact on children's later development; therefore, kindergarten teachers must be competent and use appropriate teaching and educational methods (Kurent & Avsec, 2023). Teachers' perceptions regarding the use of Information and Communication Technology (ICT) deeply influences how children experience ICT-supported activities in kindergartens. ICT can be used as a presentation tool, a documentation and communication tool, and as a classroom management tool (Tian, 2024). It has been observed that ICT literacy, teacher self-efficacy, and positive experience have indirect effects, while support and self-efficacy in technology integration have direct effects on changes in teachers' use of ICT in teaching (Paetsch, Franz, & Wolter, 2023). The potential of technology in early childhood education has been widely acknowledged. The importance of adapting to a rapidly changing world is quite evident today; therefore, awareness of how to teach children so that they are prepared to face future challenges is crucial (Kurent & Avsec, 2023). The implementation of ICT by teachers directly influences how children learn in early childhood education (ECE) contexts. Although the number of studies on teachers' implementation of ICT in ECE has increased in recent years, there is still a need for a more comprehensive understanding of the factors that shape teachers' actual technology-based practices (Yang & Dong, 2024). Three types of resources have been identified (knowledge, tools, and networks) that teachers have recontextualized to apply in their own practices (Popov et al., 2025). Although teachers generally report positive attitudes toward digital educational resources, their adoption is not uniform; four distinct evaluative profiles have been identified, ranging from skepticism to full integration. The presence of digital educational resources has been found to be a stronger predictor of their adoption than teachers' technical knowledge (Sosa-Alonso et al., 2025). The same authors discuss the influence of digital determinism and anticipatory beliefs, which can lead to an uncritical integration of digital educational resources in the teaching process.

The use of digital educational resources influences the learning process by improving children's cognitive skills; cognitive, metacognitive, and motivational outcomes (Sibley et al., 2025; Fahrni et al., 2025); social development (Elbaum, Perry, & Messinger, 2024); and creative

thinking abilities (Sun, Wang, Dai, & Li, 2025; Mengyun et al., 2025). A distinction can be made between two educational environments: on the one hand, the kindergarten, and on the other, hyper-technological family environments where video games, smartphones, and the Internet are always available. In kindergartens, activities occur under the teacher's supervision, who stimulates, guides, and corrects essential steps in children's education. In family environments, technology is increasingly omnipresent. These new technologies often fail to stimulate children cognitively, instead providing entertainment without parental participation or supervision (Miranda, Marzano, & Lytras, 2017). The same authors identify three types of indicators involved: measures for the use of learning environments, indicators of satisfaction and engagement among different actors, and the real impact on children's socio-cognitive development. Some studies have focused on kindergarten teachers' emotions when using technology and their relationships with emotional intelligence, technological self-efficacy, and latent multi-level emotional profiles to explore: (1) emotional profiles in technology use, (2) the predictive role of emotional intelligence in profile membership, (3) the association between emotional profiles and teachers' technological self-efficacy (Li, Bai, & Liu, 2025). The research identified four teacher profiles: suppressed, balanced, engaged, and conflicted. Furthermore, emotional intelligence—particularly the perception, use, and understanding of emotions—predicted membership in more positive emotional profiles. Teachers with more positive emotional profiles demonstrated higher technological self-efficacy (Li, Bai, & Liu, 2025). Another study identified four teacher profiles regarding artificial intelligence: enthusiasts, cautious supporters, skeptics, and pragmatists (Zhang et al., 2025). Moreover, the results highlight the importance of AI compatibility and digital literacy-related factors in shaping AI acceptance among teachers. When discussing artificial intelligence, one important aspect to consider is how the application of these tools in education will transform the entire experience of children, their knowledge, and their relevant skills in this era of artificial intelligence (Ukwandu et al., 2025). An empirical study investigates the revolutionary potential of integrating artificial intelligence and predictive analytics to identify learning challenges at an early stage within the continuously evolving educational landscape. The role of AI in education is examined, emphasizing its capacity to personalize learning and streamline administrative tasks. The study envisions a future in which AI-based predictive analytics foster interdisciplinary collaboration, continuous improvement, and the integration of cutting-edge technologies—ultimately leading to a more efficient, personalized

educational experience despite obstacles such as bias mitigation and infrastructural disparities (Ravichandran et al., 2023).

Preschoolers interact with ICT, including augmented reality (AR), in acquiring scientific concepts (Alzahrani, 2025). Digital educational applications on mobile devices hold significant potential for improving preschool children's cognitive abilities and have been widely adopted in early education (Wang & Wei, 2025).

Mobile touch-screen devices are widely recognized as accessible educational tools that enhance children's cognitive and intellectual development as early as age two. Preschool educators easily integrate technology into young children's instruction, preparing them to become digital citizens (Mak & Nathan-Roberts, 2017).

In today's rapidly evolving digital era, smart learning has become an important trend in preschool music education, and intelligent voice entertainment robots have emerged as an educational tool. A smart preschool music education model has been proposed that uses digital audio technology to promote children's learning and musical perception, providing a personalized learning experience (Xu, 2024).

Kindergarten teachers' opinions regarding the usefulness of digital technologies can influence their acceptance of tablet-based educational applications for classroom use (Hoarea et al., 2021). Preschoolers' linguistic and communication skills were shown to improve following a short tablet-based intervention designed to teach new word-object and letter-sound associations. This playful, tablet-based intervention for vocabulary and pre-reading instruction can enhance young children's linguistic and communicative abilities, which are essential for future development (Peña et al., 2024). By using various programming languages (embedding the concept of gamification in the educational process), efficiently training a model for letter recognition, and developing an intuitive graphical interface, a practical and engaging application was created that was well received by children (Brooks & Edstrand, 2023; Morel, Dinu, & Cataron, 2024).

It has been observed that children from low socioeconomic and/or migrant backgrounds often show weaker literacy outcomes than their peers. Game-based learning through applications can support the development of children's skills, although its effects may depend on app usage patterns, child and family characteristics, and individual differences (Schiele et al., 2025). One of the technologies that can be used to improve the educational process is digital storytelling. Digital stories can be used for different purposes due to the benefits they bring to the educational process (Yilmaz & Ayperi, 2023). In a 2014 study, teachers reported that they mainly used computers, projectors, and televisions in preschool activities (Yurt & Cevher-Kalburan, 2011;

Bağcı, İlbay, & Bağcı, 2014). Driven by the global wave of digitalization, the education industry is undergoing profound change, and the migration of traditional classroom teaching toward online education is accelerating, giving rise to a large number of educational platforms. Thus, the education system can enhance children's learning outcomes, stimulate engagement, and optimize learning experiences through the precise allocation of resources, offering a personalized, data-driven teaching solution in the field of educational technology and promoting the development of intelligent education (Zhang, 2025).

The use of digital educational resources also brings major challenges, such as technological implementation difficulties, insufficient teacher training (Mourlam et al., 2019; Popov et al., 2025), and lack of resources (Mengyun et al., 2025). Most preschool teachers believe that technology has significant potential to enhance learning (Yilmaz & Ayperi, 2023; Alzahrani, 2025). This holds true even when they also demonstrate empathy for traditional methods. Furthermore, some teachers have successfully used technology despite the challenges they have faced. Teachers must be provided with adequate support and professional development to ensure that digital tools are properly utilized (Alzahrani, 2025). In the context of emerging artificial intelligence technologies (AI)—such as AI robots (ChatGPT), programmable robots (Ploog & Wiktorski, 2024), virtual reality laboratories (Dodevska et al., 2025), and AI agents—it is imperative to make appropriate adjustments within the field of education. These must be carried out from an informed, responsible, and well-intentioned standpoint. There is no doubt that these technologies will transform the way we live, conduct our daily activities, teach, learn, and carry out research (Ukwandu et al., 2025).

Methodology

The research started from the following objectives: identifying and analyzing the educational resources used by preschool teachers, and assessing the usefulness of using information technologies in the teaching process with preschoolers. The method used was the survey, with the questionnaire as the instrument. It was built on three dimensions: types of teaching aids used in the educational process, usefulness of information technologies in the teaching process with preschoolers, and identification data. The questionnaire was developed and validated especially for this research (Cronbach's Alpha = 0.7671, medium consistency). The questionnaire items involved dual choices, multiple choices, and Likert-type response scales. Data were collected during May–June 2025. Consent was obtained before applying the instrument, and participants were informed about: the purpose of the

research, the method, the instrument, associated risks, and their rights. Participants were assured of the confidentiality of their data. On average, completing the questionnaire took 10–15 minutes per participant. The research group consisted of 221 preschool teachers. Of these, 98.6% (218 subjects) were female, and 1.4% (3 subjects) were male. The average age of the participants was 38.68 years. Most subjects belonged to the 40–49-year age range (74 subjects – 33.5%), followed by those aged 30–39 years (59 subjects – 26.7%), those aged 20–29 years (56 subjects – 25.3%), and the fewest were over 50 years old (32 subjects – 14.5%). Depending on the environment where the kindergarten was located, 171 subjects (77.4%) worked in urban areas and 50 subjects (22.6%) in rural areas. According to teaching degree, the distribution was as follows: 49.8% – 110 subjects with the permanent degree; 24% – 53 subjects with first teaching degree; 16.3% – 36 subjects with second teaching degree; 9.9% – 22 subjects' beginners. From the perspective of teaching experience, most subjects, 65 (29.4%), had between 1 and 4 years, followed by 49 subjects (22.2%) with 5–9 years, then 48 subjects (21.7%) with over 20 years, 31 subjects (14%) with 15–20 years, and 28 subjects (12.7%) with 10–14 years. The level of education completed is another indicator by which participants can be characterized: 150 subjects (67.9%) had completed university studies, 58 subjects (26.2%) had completed master's studies, and 13 subjects (5.9%) had completed specialized high school. Regarding the research topic related to information technologies, participants were asked whether they had attended courses in information technology. 133 subjects (60.2%) had attended such courses, while 88 subjects (39.8%) had not.

Results

We begin with the analysis of the first objective: identifying and analyzing the educational resources used by preschool teachers. The preschool teachers were presented with a series of teaching aids - both traditional (charts, sound recordings, etc.) and those involving technological means (laptop, projector, educational software, etc.). They had to select those they use in the teaching process (the item was on a Likert scale, where the value 5 represented very often and 1 represented never). A very large number of preschool teachers preferred to use (see Table no.1) charts as teaching materials (M-4.69, SD-.62, for a maximum of 5 and a minimum of 1), followed by the magnetic board (M-4.29, SD-.92), and in third position, a technological means — the laptop/computer (M-3.91, SD-1.27) (see Table no.1). Markers (M-3.62, SD-1.27) and flipcharts (M-3.45, SD-1.44) were also chosen before traditional sound recordings (M-3.03, SD-1.41) and the

television (M-2.95, SD-1.4). Educational software was used less frequently (M-2.91, SD-1.75 — the large standard deviation shows a lack of response homogeneity). The same lack of homogeneity appeared in the use of the projector (M-2.38, SD-1.57) and video games (M-2.08, SD-1.62).

Table no.1. Teaching aids used – mean values

Teaching aids	Mean	SD	Maximum	Minimum
Charts	4.69	0.62	5	1
Magnetic board	4.29	0.92	5	1
Laptop / computer	3.91	1.27	5	1
Marks	3.62	1.27	5	1
Flipchart	3.45	1.44	5	1
Sound recordings	3.03	1.41	5	1
Television	2.95	1.4	5	1
Educational software	2.91	1.75	5	1
Projector	2.38	1.57	5	1
Video games	2.08	1.62	5	1

The following medium-level correlations were recorded, for $p = 0.01$: between flipchart and sound recordings ($r = .488^{**}$), between laptop/computer and educational websites ($r = .408^{**}$), and between laptop/computer and projector ($r = .436^{**}$). Following the application of the ANOVA test, the following results were obtained: $F(2.9) = 7.57$, $p < .005$ between the use of charts and the use of teaching aids belonging to information technologies. Significant differences were observed between the use of teaching aids and the teaching degree of preschool teachers, as follows: for the use of charts: $F(2.67) = 7.56$, $p < 0.01$; use of laptop/computer: $F(10.3) = 7.08$, $p < 0.01$; use of educational software: $F(20.9) = 7.08$, $p < 0.01$; use of projector: $F(11.2) = 4.88$, $p < 0.01$.

The use of teaching aids belonging to information technologies in preschool activities is a common practice for 87.8% ($n = 194$) of the participants in this study (Sosa-Alonso et al., 2025). From the perspective of frequency of use by preschool teachers in teaching activities, 44.3% ($n = 98$) use them often, 29% ($n = 64$) very often, 15.8% ($n = 35$) moderately, and only 6.3% ($n = 14$) rarely or 0.9% ($n = 2$) very rarely. Only 3.6% ($n = 8$) of teachers stated that they do not use information technologies at all.

Another item in the questionnaire investigated which technological teaching aids are used by preschool teachers in educational activities. The options presented were: television, video games, laptop/computer, educational software, educational platforms, projector, and tablet.

Participants had to select the tools they use in the teaching process (on a Likert scale where 5 = very often and 1 = never).

The most used technological teaching aid among preschool teachers is the laptop (rarely the computer) (M-4.14, SD-.92) (see Table 2). Indeed, the laptop is used by the majority of preschool teachers in the teaching–learning process (the mean value being close to the maximum) — for images, various didactic games, and accessing educational platforms. These platforms rank second in usage in kindergartens (M-3.62, SD-1.27), being increasingly accessed for the rich materials they offer. Educational software is also preferred for its content, interactivity, and age-appropriateness (M-3.44, SD-1.43). The “old” television is still used (M-3.07, SD-1.19) in preschool activities. The following teaching aids show a large standard deviation, indicating a lack of response homogeneity: projector (M-1.96, SD-1.68), video games (M-1.81, SD-1.38), and tablet – the least used (M-.77, SD-1.16).

Table no. 2. Technological teaching aids used – mean values

Teaching aids	Mean	SD	Maximum	Minimum
Laptop / computer	4.14	0.92	5	1
Educational platforms	3.62	1.27	5	1
Educational software	3.44	1.43	5	1
Television	3.07	1.19	5	1
Projector	1.96	1.68	5	1
Video games	1.81	1.38	5	1
Tablet	.77	1.16	5	1

The teachers prefer to use these teaching aids in various combinations, the most frequent being (Yurt & Cevher-Kalburan, 2011; Bağcı, İlbay, & Bağcı, 2014): laptop – educational software – Internet – educational platforms (37 choices), laptop – Internet (18 choices), games – laptop – Internet – educational platforms (16 choices), and games – laptop – software – Internet – educational platforms (16 choices). Most preschool teachers (38% – 84 subjects) reported using information technology tools in 1–2 activities per week, 28.1% (n = 62) in 3–4 activities per week, and 24.9% (n = 55) in 1–2 activities per day.

In addition, 12 subjects (5.4%) stated they use them 1–2 times per month, and 8 subjects (3.6%) declared that they do not use them at all. Teachers with the permanent degree most frequently use the television (62 choices), educational software (40 choices), educational platforms (49 choices), and the projector (25 choices).

Next, the second objective is analyzed: evaluating the usefulness of using information technologies in the teaching process with preschoolers.

Table no. 3. The role of technological teaching aids – mean values

Teaching aids	Mean	SD	Maximum	Minimum
Facilitation / deepening of knowledge	9.26	0.90	10	7
Development / deepening of skills and abilities	9.19	0.99	10	5
Development / deepening of personality traits	8.33	1.38	10	5
Support of thinking operations	8.85	1.19	10	6

It is observed that respondents consider technological teaching aids to play a facilitating and knowledge-deepening role (M-9.26, SD-.90) (Yurt & Cevher-Kalburan, 2011; Bağcı, İlbay, & Bağcı, 2014), as well as a skill-forming and strengthening role (M-9.19, SD-.99) and a supporting role for thinking operations (M-8.85, SD-1.19) (Mak & Nathan-Roberts, 2017). The least emphasized role was that of developing personality traits (M-8.33, SD-1.38). Regarding the impact of technological teaching aids on preschoolers' results, most preschool teachers (86.4% – n = 191) stated that results are better when classical methods are combined with information technology-based teaching aids. For 7.2% (n = 16), combining classical methods with IT tools did not influence preschoolers' results. Additionally, 2.7% (n = 6) said results were similar to those obtained using classical methods alone, while 8 subjects (3.6%) did not respond.

Another item examined the learning opportunities provided to preschoolers by technological teaching aids, in terms of the following functions: communication, illustrative-demonstrative, formative-educational, stimulating, and performance evaluation. Respondents could make multiple choices. The combination communication – illustrative-demonstrative – formative-educational – stimulating – evaluation gathered the highest number of choices (42 – 19%), followed by communication – illustrative-demonstrative – formative-educational – stimulating (40 – 18.1%). The fewest choices were for the single functions: stimulating and evaluation, each with 2 choices (0.9%). Participants' personal needs regarding adaptation and performance through technological teaching aids were also investigated. The first reported need was primary / additional training for the use of information technologies, totaling 64 choices (28.96%) (Mourlam et al., 2019; Popov et al., 2025). This was by far the most pressing need, followed by non-responses (21.72% – n = 48). The acquisition of information technology tools by kindergartens was the second most mentioned need (14% – n = 31) (Mourlam et al., 2019;

Popov et al., 2025). Lower percentages (under 10%) were recorded for: lack or poor Internet connection (9% – $n = 20$) and support/training for equipment use (7.2% – $n = 16$). There were also 8 participants (3.6%) who stated that “you cannot stimulate a child through technology.” For the second choice of personal needs, results were similar but with the first two positions reversed: acquisition of information technology tools by kindergartens (29 choices – 13.1%), and lack or poor Internet connection (21 choices – 9.5%). This second response also introduced a new option: adapting classical content for online activity (5.9% – $n = 13$). For a third need, subjects again selected adapting classical content for online activity (8.1% – $n = 18$), along with primary/supplementary training for the use of information technologies (Alzahrani, 2025), introducing technology in kindergarten activities, and parents’ reluctance toward technology, all at 3.6% ($n = 8$). Most respondents abstained from choosing a second or third need (second need: 59.7% – $n = 132$; third need: 76.9% – $n = 170$). The following medium-level correlations were found for $p = 0.01$: between television and educational software ($r = .511^{**}$), between laptop/computer and educational platforms ($r = .486^{**}$); and high-level correlations for $p = 0.01$: between television and educational platforms ($r = .647^{**}$) and between software and educational platforms ($r = .678^{**}$). Following the ANOVA test, the result was $F(25) = 8.66$, $p < .004$ between Internet use and teaching aids belonging to information technologies.

Conclusions

In reference to the teaching aids used by preschool teachers, most of them use charts ($M=4.69$, $SD=.62$), followed by the magnetic board ($M=4.29$, $SD=.92$), and only in third place do they choose a technological means, namely the laptop/computer ($M=3.91$, $SD=1.27$). The most frequently used information technology-based teaching aid employed by preschool teachers is the laptop/computer ($M=4.14$, $SD=.92$), followed by educational platforms ($M=3.62$, $SD=1.27$) and educational software ($M=3.44$, $SD=1.43$). The following medium-level correlations were recorded for $p = 0.01$: between flipchart and sound recordings ($r = .488^{**}$), between laptop/computer and educational websites ($r = .408^{**}$), and between laptop/computer and projector ($r = .436^{**}$). Following the application of the ANOVA test, the result was $F(2,9) = 7.57$, $p < .005$, between the use of charts and the use of teaching aids belonging to information technologies.

Regarding the importance of using information technologies in the teaching process with preschoolers, the respondents consider that these primarily play a role in facilitating/deepening knowledge ($M=9.26$, $SD=.90$), developing/deepening skills and abilities ($M=9.19$, $SD=.99$), and

supporting thinking operations ($M=8.85$, $SD=1.19$). Significant differences were observed between the use of teaching aids and the teaching degree of preschool teachers, as follows: for the use of charts: $F(2.67) = 7.56$, $p < 0.01$; for the use of laptop/computer: $F(10.3) = 7.08$, $p < 0.01$; for the use of educational software: $F(20.9) = 7.08$, $p < 0.01$; and for the use of the projector: $F(11.2) = 4.88$, $p < 0.01$. The following medium-level correlations were also recorded for $p = 0.01$: between television and educational software ($r = .511^{**}$), between laptop/computer and educational platforms ($r = .486^{**}$), and high-level correlations for $p = 0.01$: between television and educational platforms ($r = .647^{**}$) and between software and educational platforms ($r = .678^{**}$). Following the ANOVA test, the result was $F(25) = 8.66$, $p < .004$, between Internet use and teaching aids belonging to information technologies. As a result of the research, one could observe that the years following the pandemic brought an enrichment of the teaching aids used by preschool teachers, which led to increased attractiveness of the teaching process.

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AN ACADEMIC COMPARATIVE STUDY ON THE ASSESSMENT OF PRIMARY SCHOOL STUDENTS IN SINGAPORE, FINLAND, UNITED KINGDOM, JAPAN, THE UNITED STATES, THE REPUBLIC OF MOLDOVA AND ROMANIA FROM A TRANSDISCIPLINARY PERSPECTIVE

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Abstract: *This comparative study examines the organization and implementation of national assessment at the end of primary education in several leading countries in the global educational landscape. Assessment practices serve as indicators of academic performance, yet grading scales vary significantly across national systems. The article analyses the educational approaches of the selected countries with the aim of identifying integrative perspectives on the contemporary education systems. In a world undergoing continuous transformation, a holistic and personalized approach to teaching and learning becomes imperative. Learning systems must make the transition from monodisciplinary structures to transdisciplinary frameworks. The curricula of highly developed countries is based on science, robotics, and technology. All of these are discovered by the young learners through experiential learning. While in the United States the students showed reduced interest in the exact sciences, taking into consideration the reconsideration of its educational model, this is how Finland and Singapore have developed school curricula grounded in creativity and innovation, fostering skills that enable students to navigate real-world challenges. The Finnish curriculum for early grades adopts theme- or phenomenon-based learning, encouraging students to explore the real world through multidisciplinary projects. Assessment practices involving digital portfolios, projects, journals, and discussions extend beyond evaluating the final product; they encompass a range of transversal competencies such as collaboration (teamwork), critical thinking (the ability to gather and interpret information to solve a task), and*

self-regulated learning (autonomy in completing assignments).

Keywords: *grading; assessment; grading systems; national testing; STEM; interdisciplinary and transdisciplinary approaches.*

Introduction

The COVID-19 pandemic brought about a profound transformation of the learning process. It generated a form of forced digitalization which, on one hand, created opportunities for students and teachers with higher levels of digital and educational competence to adapt successfully to online environments, and, on the other hand, resulted in significant losses for disadvantaged groups who faced difficulties in accessing and adjusting to online learning.

This study adopts a comparative approach, aiming to examine how national assessment at the end of primary school is organized and implemented in several countries that consistently achieve high performance in final evaluations. Furthermore, it analyses the educational practices of the studied states in order to identify integrative perspectives on their education systems.

Research Problem

National assessment of students at the end of primary school is not standardized. It varies from one country to another, from one educational system to another, and even from one teacher to another. This diversity raises a central question: *How is national assessment of young learners performed at the end of primary education in these high-performing countries?*

Research Questions

- a) Which countries implement national assessment at the end of primary school?*
- b) What type of curricular approach is used at the primary level in the selected countries?*
- c) Do the primary school curricula of the analyzed countries assess interdisciplinary and transdisciplinary competencies grounded in STEM?*

Purpose of the Study

The purpose of this study is to analyze the curricula of countries with outstanding results in national assessments at the end of primary education, such as Singapore, Finland, United Kingdom, the United

States, and Japan. To achieve this, a rigorous examination of accredited online information sources was required.

Research Methods

The methods employed in this study included the analysis of curricular documents available on specialized platforms (official websites of ministries of education), as well as the review of scholarly articles published in peer-reviewed journals.

Findings

Results of the TIMSS 2023 Assessment

TIMSS (*Trends in International Mathematics and Science Study*) is a global large-scale assessment conducted independently from PISA or OECD evaluations, focusing on students' competencies in MATHEMATICS, READING, and SCIENCE. The most recent TIMSS cycle took place in 2023, with 59 education systems and 6 reference entities participating at the Grade 4 level (EduPedu, 2024). Its purpose was to compare performance levels, monitor global trends, and set the basis for international education policies. Regarding the methodology, the assessment was administered entirely in digital format and included interactive tasks and problem-solving activities designed to enhance student engagement. In MATHEMATICS, Romania obtained a score of 542 points, similar to the results of Turkey, England, Poland, Ireland, the Netherlands, Latvia, and Norway. This score places Romanian students within the Intermediate Benchmark (above 475 points), close to the threshold for the High Benchmark (550 points), yet still far from the Advanced Benchmark (625 points). The top performers were Singapore 615 points, Japan 591 points, United Kingdom 552 points, Finland 529 points, and the United States 517 points (EduPedu, 2024).

In SCIENCE, Singapore again ranked first with 607 points, followed by the United Kingdom 566 points, Japan 565 points, Finland 542 points, and the United States 532 points. Romania achieved 526 points, a score above the international average but significantly lower than its mathematics performance, similar to the results of the Czech Republic, Slovenia, and Lithuania, according to the same report (EduPedu, 2024).

The diagram below illustrates a comparative view of the *Mathematics and Science* results obtained by the countries participating in the 2023 TIMSS study and published in November 2024.

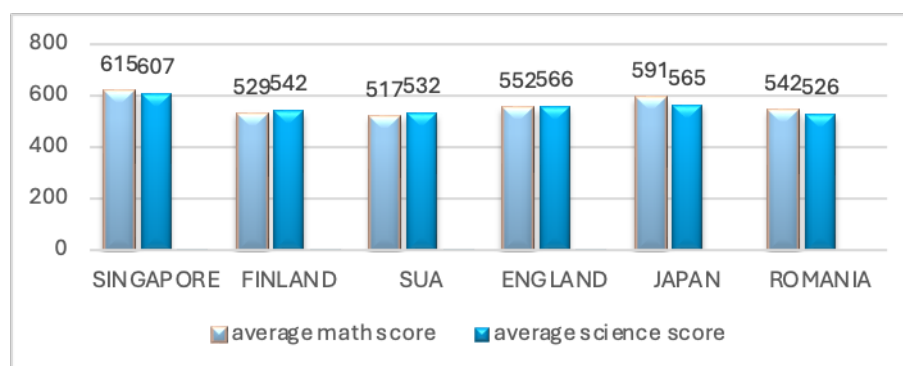


Fig. 1 The average mean and score in Mathematics and Science – TIMSS, IVth grade, 2023 (for the studied countries)

But what do the performance benchmarks used in TIMSS 2023 represent?

According to EduPedu (2024), for MATHEMATICS, Grade 4:

- LOW BENCHMARK (400) – students demonstrate a basic understanding of mathematics.
- INTERMEDIATE BENCHMARK (475) – students show mathematical knowledge in simple situations and can relate different representations.
- HIGH BENCHMARK (550) – students apply various concepts and representations in broader contexts.
- ADVANCED BENCHMARK (625) – students can select and apply information to implement appropriate operations for solving problems.

For SCIENCE, Grade 4, the performance benchmarks are:

- LOW BENCHMARK – students know some basic scientific facts.
- INTERMEDIATE BENCHMARK – students demonstrate and apply their knowledge of scientific concepts.
- HIGH BENCHMARK – students can demonstrate and apply knowledge in life sciences, physics, and other sciences which can be applied in certain scientific inquiry practices.
- ADVANCED BENCHMARK – students can demonstrate, apply, and communicate their scientific knowledge and engage in multiple scientific inquiry practices.

Results of the PIRLS 2016 and 2021 Assessments

Administered every five years, PIRLS testing evaluates the reading abilities of 10-year-old children worldwide. According to the IEA TIMSS and PIRLS 2021 report, Singapore once again ranks first with 587 points, followed by the United Kingdom in fourth place with 558

points, surpassing Finland, which ranks fifth with 549 points. Similarly, in the IEA TIMSS and PIRLS 2016 testing, the countries analyzed in this article achieved remarkable results. Singapore ranked second with 576 points, after the Russian Federation- 581 points. Finland occupied fifth place with 566 points, followed by the United Kingdom and Chinese Taipei with 559 points, and the United States with 549 points. In 2021, the United States does not appear in the ranking because it did not manage to report its data on time, along with five other countries, because of the COVID-19 pandemic.

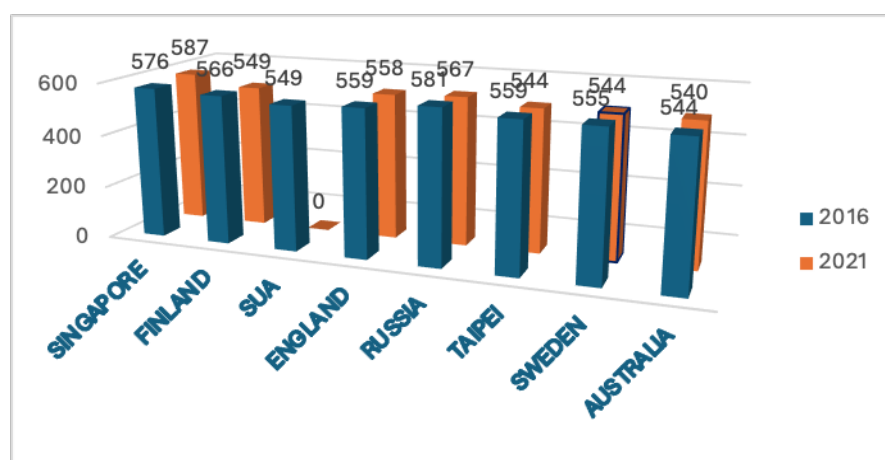


Fig. 2 Mean and average score in Reading, PIRLS testing 2016 and 2021

The PIRLS 2021 assessment was conducted in 57 countries and differs from previous editions through its transition to *an innovative, fully digital evaluation*, with texts designed to be engaging for students and the data collection, being difficult to achieve throughout the two-year period, during the COVID-19 pandemic.

Curriculum Analysis

Singapore

In contemporary times, Singapore's educational system is regarded as one of the most effective in the world. Its holistic education encourages children to acquire extensive knowledge and to cultivate a curiosity that extends beyond formal education. At the same time, Singapore maintains a preference for *traditional pedagogy*, in which teachers lead the class, an approach that contrasts with the views of many reformers who advocate for more progressive models that promote self-directed learning (Ministry of Education, National Education, MOE, 2023).

Teachers, who are well compensated yet rigorously evaluated, receive 100 hours of professional development annually to remain up to date with new instructional techniques. They prefer the numerous classes (36 students per class, compared to the OECD average of 24). The country consistently ranks at the top of the OECD's Programme for

International Student Assessment (PISA), administered every three years to eighth-grade students in Mathematics, Reading, and Science. Singaporean students are considered to be nearly three years ahead of their American peers in Mathematics. They also achieve similarly strong results on the national examination taken at the end of Grade 6. An analysis of Singapore's curriculum reveals a *predominantly monodisciplinary structure, while also showing a growing tendency toward interdisciplinarity*. The primary school curriculum is designed to provide young learners with a solid foundation. Students study subjects such as foreign languages, mathematics, science, arts, music, physical education, social studies, and character and citizenship education. In upper primary, Grades 5 and 6, depending on their national assessment results, students may study Mathematics and Science at either the standard or advanced level. Some younger students benefit from specialized early-intervention programs in English, mathematics, and mother-tongue languages. *The Learning Support Programme* (LSP) is led by trained teachers in small groups of 8–10 students, for 30 minutes daily. The Primary School Leaving Examination (PSLE) assesses students' competencies and skills, and based on their performance, they are placed into secondary school pathways that align with their learning pace and abilities. Consequently, some countries express reservations about Singapore's practice of separating high-achieving students from those with more modest results after the Grade 6 assessment, a practice not fully agreed with by all parents, who argue that the PSLE places considerable stress on children.

FINLAND possesses one of the most effective educational systems in the world, as evidenced by the fact that 93% of upper-secondary graduates pass the graduation exam, 65% of high-school students continue to university studies, and only 10% of those who aspire to become teachers ultimately enter the profession. Teachers place equal emphasis on children's emotional development and academic growth. Pupils, relaxed and confident during lessons, are encouraged to express their opinions and talents, and they feel seen and heard. Students address teachers by their first names, fostering closeness and encouraging relationships built on trust, mentorship, and personal development. The Finnish education system, fully state-funded, with no admission exams and no tuition fees, *borrow*s methods inspired by Montessori, Waldorf, and Step-by-Step philosophies, aiming to bring real life into the classroom through experiments, hands-on activities, and outdoor learning. Consequently, it is common for Finnish students to conduct biology lessons in the forest or to meet invited guests who speak about their professions.

Finland has abandoned the strict division of knowledge into age-segmented school subjects and has transitioned toward an education model grounded in inter- and **trans disciplinarity**. Traditional subjects, as understood in standard educational systems, are gradually being replaced by *phenomenon-* or *theme-*based instruction. Instead of focusing on conventional subjects such as English, mathematics, or history, schools emphasize argumentation, character formation, and personality development. **Trans disciplinarity** aims to provide students with transferable competencies and requires classroom activities to support integral education by removing boundaries between disciplines.

The school pathway is structured into three levels: *compulsory education*, *secondary education*, and *higher education*. Before the age of seven, children attend preschool, followed by compulsory elementary education until age sixteen. At sixteen, students may choose either an academic or vocational track (three years), with 43% opting for vocational schools. At 19, students may enter university, followed by master's and doctoral studies. Another notable feature of Finnish education is the provision of free, nutritionally balanced meals for all students, reflecting the belief that maintaining and improving students' health and well-being is essential for learning.

Regarding **assessment in Finland**, it emphasizes support for students' educational development. Pupils receive no grades during their first six years of schooling and are not ranked. The Finnish curriculum requires continuous assessment throughout the school years and a final evaluation that leads to a certificate of completion. In Grades 1–3, the assessment is verbal or numerical: 5 – adequate, 6 – moderate, 7 – satisfactory, 8 – good, 9 – very good, 10 – excellent (Eurydice – Student Assessment in Finland).

Finnish primary education is well-known for its effectiveness in meeting children's individual needs. It emphasizes an integrated approach based on experiential learning and extensive play. Students enjoy 15 minutes of play after every 45-minute lesson, which supports development and concentration. There are no standardized tests until the end of upper-secondary school. Continuous assessment is conducted by the teacher responsible for Grades 1–6, who supports each student individually without ranking them. Primary teachers provide qualitative evaluations based on verbal feedback and progress reports. In Grades VI–IX, students receive grades, and during Grade IX teachers prepare several reports aligned with the criteria of the final evaluation. There is only *one mandatory standardized test, taken at age sixteen*. At the end of each school year, students receive a report. A frequently mentioned vulnerability of the Finnish system is that it does

not strongly encourage the Olympians, focusing instead on the average level, however, the system is intentionally designed to meet the needs of all children.

The Finnish curriculum for Grades I-VI adopts **phenomenon/theme-based learning**. Students do not study subjects separately but explore **the real world through multidisciplinary projects**. Subjects such as Finnish/Swedish language and literature (official languages), mathematics, foreign languages, practical and artistic skills, natural sciences, and ethics/religion are integrated. For example, in a five-day project titled *The Forest*, students may measure trees (mathematics), draw landscapes (arts), identify tree species (science), or memorize a poem (language and literature).

Assessment focuses on the learning process and each student's individual progress rather than ranking.

Key **principles** in project assessment include:

- *Continuous formative assessment*, the students benefit from ongoing feedback until they finish the project, with role of guidance and coordination.
- *Self-assessment and peer assessment*, encouraging reflection on one's own work.
- *Absence of grades*, with descriptive evaluation delivered verbally or through individual reports detailing acquired competencies.

What is assessed in a project?

Assessment in early grades goes beyond the final product and includes *transversal competencies* such as *collaboration* (teamwork), *critical thinking* (how information is gathered and interpreted), and *self-management* (autonomy in completing tasks).

Assessment tools include digital portfolios, learning journals, and individual discussions.

According to the *Finnish National Agency for Education (2025)*, each school is required to implement at least one multidisciplinary module or project per year, and its assessment must integrate objectives from multiple subjects, creating a holistic picture of the student's development.

THE UNITED STATES OF AMERICA

In the United States, children begin school at the age of 5 and complete high school at 18. The American education system is structured differently depending on each state (Integral Edu, 2021):

- The 6+3+3 model: elementary school (K–5), middle school (6–8), high school (9–12);
- The 8+4 model: elementary school (K–8), high school (9–12);

- The 6+6 model: elementary school (K–6), combined junior and senior high school (7–12).

In elementary school, students study mathematics, science, physical education, social studies, and the arts. In the U.S., transversal competencies specific to the primary curriculum vary from state to state. The curriculum typically includes mathematics, science, reading, literature, visual arts, physical education, and music. Teaching standards are established by each state for all curriculum areas. The guiding principle of American education is the *No Child Left Behind* philosophy, with a strong emphasis on mathematics and reading. The interest in *integrated and transdisciplinary learning* has increased, and many teachers employ innovative strategies that develop critical thinking, inquiry-based learning, and experimentation. This approach develops interdisciplinary skills such as teamwork and communication. Student placement is determined by residential address rather than entrance examinations.

Grading in the U.S. resembles that of China, and admission to college requires two standardized tests: *the American College Testing* (ACT) and *the Scholastic Aptitude Test* (SAT), both assessing mathematics, science, and text analysis. The grading system consists of five letter grades: A for exceptional performance, B for above-average performance, C for average, D for below average, and E or F for poor or very poor performance (Andrei C. P., 2022).

THE UNITED KINGDOM

The first year of primary education in the UK is called the *Reception Year*, corresponding to the final year of kindergarten in Romania. Children learn to write, read, and acquire basic mathematical skills. Classes include a maximum of 30 pupils, and teachers change annually, allowing children to interact with different adults. Education is compulsory and may be provided in state schools, private schools, or through homeschooling. Schooling is free between the ages of 5 and 16. Children attend nursery for only one year, then enter the preparatory class at age 4–5, where extracurricular activities predominate, followed by formal education.

Education in UK is structured into *Key Stages*, and *SATs* are standardized tests taken by primary school pupils in May. These tests assess knowledge in English and mathematics. Testing varies across the UK. In *Wales*, teachers administer *personalized assessments in reading and numeracy*. In *Scotland*, pupils take *assessments in reading, writing, and numeracy* in primary years P1, P4, and P7. The *Early Years Foundation Stage* (EYFS) provides a summary of a child's developmental progress to support their transition into Year 1. This

assessment takes the form of a questionnaire covering 17 developmental domains, including physical, emotional, and social development. The phonetic testing (KS1), taken by 6-year-olds individually with a teacher, is considered the most effective tool for assessing phonetic skills.

Year VI (ages 10–11) includes standardized assessments (SATs) in mathematics, reading, and writing, aligned with the national curriculum. *Previously, tests were graded by levels, but parents now receive raw scores alongside national averages* (Exam Papers Plus, 2025).

Year VI (10-11 years old category) is also called *The 11 Plus* and it supposes the students to take 11 exams in order to be admitted in the secondary schools. Although testing varies by region, it generally covers *Mathematics* (also known as numerical reasoning), *Verbal reasoning*, and *Non-verbal reasoning* (not required in all schools). The UK offers a wide range of educational options (state schools, private schools, academies, and international schools). Compared with the Romanian system, the English system includes *boarding schools*, where students may reside during the term. A major difference between the two systems is the extremely high cost of private education in the UK.

Regarding the grading system, it uses either letters (A+, A, B+, B, C+, etc.) or percentages up to 100%. The average is expressed through the *Grade Point Average (GPA)* system, with a maximum score of 4 (Exam Papers Plus, 2025).

JAPAN

The Japanese pre-university education system comprises 12 years of study, 9 of which are compulsory: 6 years of elementary school, 3 years of lower secondary school, and 3 years of upper secondary school. The school year begins in April and ends in March of the following year. Holidays are shorter, with the summer break lasting from 20 July to 25 August. Classes are large (30–40 pupils), the minimum school age is 6, and uniforms are mandatory. Subjects include Japanese language, mathematics, English, science, physical education, music, calligraphy (for learning Japanese characters), and home economics. Students spend 7 hours per day at school, from 8:30 to 15:30. Lunch is served in the classroom, free of charge and nutritionally balanced. Schools do not employ *cleaning* staff; cleanliness is maintained partly because both students and teachers wear special indoor shoes. Examinations in Japan are extremely rigorous. At age 12, students take entrance exams for lower secondary schools, and at age 15 for upper secondary schools. These exams are so demanding that the preparation period is known as *shiken jigoku*

(“*exam hell*”). Students often prepare for up to two years in advance, studying at home, at school, and in *juku*, schools specialized with training students for the exams. For university admission, only 56% of candidates succeed on their first attempt.

According to Nihon (2018), the Japanese education system is structured as follows:

- Yōchien (幼稚園, kindergarten): ages 3–6
- Shōgakkō (小学, elementary school): ages 6–12
- Chūgakkō (中学, lower secondary school): ages 12–15
- Kōkō (高校, upper secondary school): ages 15–18
- Daigaku (大学, university) or Senmongakkō (専門学校, vocational school), typically 2–4 years long

In comparison, the U.S. system includes:

- Preschool (ages 3–5)
- Kindergarten (ages 5–6)
- Elementary school
- Middle/junior high school
- High school
- College/University/Vocational school

A major difference between Japanese and American primary schools is the subject of *moral and ethical education in Japan*, taught alongside core subjects such as mathematics, science, music, and physical education. This discipline emphasizes character development and manners. Students learn values such as kindness, compassion, justice, courage, generosity, and empathy. No standardized tests are administered before age 10. 85% of students report being satisfied with school, and no student repeats a grade within grade I-VII. The Japanese public education system is considered a source of national pride and consistently ranks among the top performers in PISA assessments. Thus, Japan administers the *National Assessment of Academic Ability (NAAA)* in grades VI and IX. These assessments cover mathematics, Japanese language, and science, and since 2019, English as well. The test includes items assessing both subject knowledge and the ability to apply knowledge in everyday situations. In 2019, these sections were combined to reflect the revised curriculum. The same subjects are tested simultaneously. The government publishes annual regional average scores, and local education boards may choose to release school-level results. These scores are generally used to identify areas for improvement in teaching and learning.

How are students assessed in Japan?

Teachers monitor each student’s progress and provide personalized feedback. Emphasis is placed on practical learning, creativity, and

problem-solving. Instead of grades, young students are encouraged through praise, intrinsic motivation, and self-assessment. Despite the absence of grades in early years, the Japanese education system remains one of the most effective in the world. Education focuses not only on competition and achievement but also on cultivating responsible individuals motivated by genuine interest rather than obligation.

Japan promotes an educational philosophy grounded in discipline and respect.

REPUBLIC OF MOLDOVA

In the Republic of Moldova, national assessment at the end of grades I–IV is administered in Romanian Language and Literature (for non-native speakers – oral examination), Mathematics, the Language of Instruction, and Mother Tongue and Literature (Ukrainian, Bulgarian, Gagauz). Pupils do not receive numerical grades, only qualitative descriptors, and, according to the *Methodology for Organizing and Conducting National Testing in Primary Education* (2019), the conversion of scores into qualifiers is as follows: Recovery – 0–24 points; Sufficient – 25–57 points; Good – 58–89 points; Very Good – 90–100 points.

The qualifier obtained functions as a current qualitative assessment awarded following a final evaluation. In the Republic of Moldova, criterion-referenced assessment based on performance qualifiers is applied. This type of assessment represents a system of teaching, learning, and continuous, differentiated evaluation that does not rely on numerical classification. According to the valid methodology, performance qualifiers are qualitative criteria that describe how pupils' competencies are manifested, facilitating the evaluation of achievement levels.

According to the National Agency for Curriculum and Evaluation of the Ministry of Education and Research of the Republic of Moldova, a new element introduced in the 2025 national testing session was the possibility for pupils to take the mathematics test in digital format, because in 2024 a pilot test where 25 primary school pupils from two high schools in Chişinău took part in. They solved 14 mathematics items in 60 minutes on a specialized digital platform. *Transdisciplinary activities* in the Republic of Moldova aim to develop life competencies through an integrated curriculum approach focused on real-world problems in everyday contexts. These activities, performed both inside and outside the classroom, promote positive interaction, motivation, and active participation in one's own learning, by harnessing the elements of experiential learning, the adventure learning (expedition-based), inquiry-based learning, research activities, museum

learning, field trips, task-based learning, and problem-based learning. However, STEM activities are not included in the Moldovan curriculum. Even so, the cognitive development characteristics of primary-level pupils allow the interdisciplinary approaches to practical STEM activities, enabling problem-solving from multiple new perspectives.

ROMANIA

In Romania, according to the National Education Law (Law 1/2011), the purpose of assessment is *to guide and optimize learning*. All assessments are performed based on national evaluation standards, and results are expressed through qualifiers at the primary level. Assessment is competence-based, provides feedback to pupils, and forms the foundation of individual learning plans (Eurydice, 2025). At the end of the preparatory grade, a comprehensive evaluation report is drafted, covering physical, socio-emotional, cognitive, linguistic, communicative, and learning-attitude development.

The *Fundamental Acquisition Cycle* corresponds to the first three years of schooling and focuses on developing basic competencies: reading, writing, mathematical calculation, values, and attitudes. This stage also lays the groundwork for further studies and productive integration into the educational system. The *Development Cycle* (grades III–VI) marks the formation of capacities necessary for continued learning and targets cognitive and sociocultural competencies, as well as the enhancement of imagination and creativity. By the end of primary education, pupils are expected to have developed the competencies outlined in the curriculum.

At the primary school level, *the Romanian curriculum adopts a predominantly integrated approach* in the preparatory, first, and second grades, which has become particularly significant. Mathematics (MEM) is studied in correlation with Environmental Exploration – Natural Sciences, requiring a multi-perspective approach to topics. Other subjects include Music and Movement, Visual Arts, and Practical Skills. In grades III and IV, as well as in lower and upper secondary education, the curriculum shifts toward a monodisciplinary approach.

Article 68 of the National Education Law no. 1/2011 identifies eight key competencies shaping *the student formation profile*: communication in Romanian and the mother tongue, communication in foreign languages, mathematical, scientific, and technological competencies, digital competencies, social-civic competencies, entrepreneurial competencies, learning-to-learn competencies, and cultural expression competencies.

According to Article 9(1) of the Methodology for Organizing and Conducting National Testing in Primary Education, *tests for the National Assessment (EN) are developed by the National Center for Assessment and Examination (CNEE), taking into account the following requirements:*

- a) clarity, precision, and strict alignment with the current school curricula for each subject;
- b) a medium level of difficulty.

The tests designed for the National Assessment resemble those used internationally. *The teacher's booklet*, prepared by CNEE, includes the marking scheme and other essential information about the testing process. The first test for EN II assesses written message production; the second evaluates reading comprehension; the third assesses mathematical competencies.

Regarding the revision of assessment methods and exam formats, L. Ciolan (2008) mentions *that the results obtained by Romanian pupils do not support the myth that the national education system is high-performing, nor that current assessment practices are adequate*. International test items focus on application, competencies, skills, correlations, transfer, and critical thinking. The national assessment practices remain limited, relying heavily on mechanical memorization. In this context, the introduction of **alternative, competence-based assessment methods** are urgently needed to support an integrated curriculum.

Does the curriculum of the analyzed countries include STEM/STEAM/STREAM activities?

One of the main reasons STEM education is included in education, including at the primary level, in developed countries (the United Kingdom, Finland, the United States, Japan, China, etc.) (Freeman et al., 2019) is that it offers a constructivist approach to integrating natural sciences, mathematics, engineering, and technology.

To meet society needs, education systems are continuously evolving. Educational development aims to foster innovation in the field of technology. STEM integrates science, technology, engineering, and mathematics. Adding A (Arts) results in STEAM, and integrating STEAM with R (reading – literacy) produces STREAM, which enhances children's communication skills. Since the world cannot be understood monodisciplinary, most real-life problems require the connection of multiple disciplines. Finland is highly committed to STEM, treating it as an instructional standard. Singapore, although maintaining a monodisciplinary curriculum with interdisciplinary tendencies, offers STEM programs through agencies coordinated by the Ministry of Education, which support schools in implementation. In

the United States, interest in STEM has increased due to lower PISA results among 15-year-olds and declining interest in technical fields, leading to a growing need for engineering and other specialists. Former President Obama integrated STEM into the school curriculum, yet challenges persist due to insufficient teacher training and organizational management. Japan, China, Taiwan, and South Korea have national policies and plans in science and technology. For example, Japan has the Science and Technology Law and five-year basic plans emphasizing research and innovation, essential in an advanced society.

The UK's *STEM Learning platform* provides teaching materials for teachers and not only. Additional valuable resources are available on the IEP Platform, offering materials organized by domain, age, topic, and project/experiment duration.

In Romania, unfortunately, interest in STEM remains limited, with only a few teacher training courses or summer schools for students.

The table below illustrates how the countries analyzed in this study integrate STEM elements into the primary school curriculum, with approaches ranging from fully interdisciplinary integration to optional programs or national strategies under development. Here is how STEM is present in the curriculum of each analyzed country:

Country	Approach	Implementation
Singapore (Global leader in integration)	STEM is the foundation of the educational system.	Begins as early as kindergarten, with a strong focus on research and innovation for future-oriented industries.
Finland (Emphasis on STEM and inter-/trans disciplinarity)	Strong focus on STEAM (including the Arts). Flexible curricular structure. Lessons adapted to students' interests.	Project-based learning and transversal competencies are central, promoting problem-solving through collaboration across disciplines.
United Kingdom (integration through practical projects)	The national curriculum includes clear specifications for STEM, combining science, technology, and mathematics to create practical Design-	Science often serves as the catalyst for STEM activities, demonstrating to pupils the applicability of theoretical concepts in everyday life.

	and-Make projects.	
Japan (<i>Zest for Life and trans curricular education</i>)	The curriculum emphasizes the concept of <i>Zest for Life</i> , integrating science education with engineering activities and digital technology.	Strong emphasis is placed on logical thinking and on processes of identifying patterns in nature and technology.
USA (<i>NGSS-based standards</i>)	Although the curriculum varies by state, the majority rely on <i>the Next Generation Science Standards (NGSS)</i> , which directly integrate engineering practices into science instruction.	STEM is a federal priority, aiming to develop critical thinking from the early years of education.
Romania (<i>developing elements</i>)	STEM is not a proper subject, but it is present through thematic modules and digital skills development programmes.	There are ongoing efforts to integrate STEAM approaches in primary education (e.g., Grades I and IV), often delivered through optional robotics courses or interdisciplinary approaches within Mathematics and Environmental Exploration, Arts.
Republic of Moldova (<i>curricular modernization</i>)	The national curriculum for primary education has been updated to include competencies specific to science and technology.	Although it remains structured around separate subjects, there is a growing tendency to integrate STEAM projects to stimulate pupils' curiosity and analytical thinking.

Table no. 1 – Integration of STEM in the primary education curriculum of the analyzed countries

Conclusions

In Romania, the curriculum prescribes an integrated approach in the preparatory grade and Grades I and II. In Grades III and IV, instruction shifts toward single subject structures, preparing pupils for lower secondary education, where a monodisciplinary model is promoted, similar to those in Singapore, Japan, and the United States. In Finland, since 2014, the curriculum has emphasized an integrative approach. The transversal competencies specified in the curricula of the analyzed countries indicate that such competencies cannot be developed within a system centered on isolated school subjects, but, mostly, a transition from monodisciplinary to interdisciplinarity and, especially, to transdisciplinarity is required.

In Singapore, the United States, and Japan, strong emphasis is placed on character formation in early education. In Finland, the focus is on developing transdisciplinary competencies related to well-being and sustainable development (Bărnăuțiu Sârca & Ciascai, 2021).

The concept of *STEM education* promotes interest in integrated STEM approaches and is well established in the countries examined in this study, with the exception of Romania and the Republic of Moldova, where no explicit curricular policy exists, although emerging initiatives can be observed.

What are the effects of a high performing educational system in the countries analyzed?

- Improved learning outcomes – international assessments consistently indicate strong educational performance and, consequently, better preparation for future professional pathways.
- Innovative curricula – emphasis on critical thinking, problem solving, and creativity.
- Global recognition – qualifications that are widely acknowledged internationally.
- Inclusion – integration of children with special educational needs as well as those from diverse cultural backgrounds.
- Support for international students – facilitated by cultural integration programmes and visa opportunities.

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THE ROLE OF LIFELONG LEARNING IN BRIDGING SKILL GAPS IN DEVELOPING ECONOMIES

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Abstract: *In the context of developing economies, the imperative for continuous skill development and workforce adaptability is paramount, driven by the rapid evolution of global job markets and technological advancements. This paper examines the critical role of lifelong learning (LLL) in mitigating persistent skill gaps within these nations. It begins by establishing a clear conceptual framework for LLL, defining it as the sustained, voluntary pursuit of knowledge and competence for both personal and professional growth, specifically tailored to the developmental challenges of emerging economies. The analysis identifies key systemic barriers that impede the effective implementation of LLL strategies, including limited access to educational resources, insufficient financial investment, infrastructural deficits, and a general lack of public awareness. Furthermore, the study evaluates existing LLL initiatives and programs, distilling best practices and critical lessons learned from current policy frameworks. Based on this comprehensive assessment, the paper proposes actionable strategies for enhancing LLL in developing economies. Recommendations are directed toward policymakers, educators, and stakeholders, emphasizing the need for increased funding, infrastructural improvements, targeted awareness campaigns, and robust public-private partnerships. By systematically addressing these challenges and cultivating a pervasive culture of continuous learning, this research posits that LLL is an indispensable mechanism for fostering a more skilled and adaptable workforce, thereby accelerating economic growth and sustainable development in the developing world.*

Keywords: *Lifelong Learning; development; economy; economic growth; employability.*

Introduction

The contemporary global economy presents developing nations with significant structural challenges, particularly in addressing the pervasive skill gaps that constrain economic expansion and social progress (BCG, 2016). In response, lifelong learning (LLL) understood as the continuous acquisition of knowledge and competencies throughout an individual's life has emerged as a vital strategic imperative (WEF, 2017). This paper systematically investigates the function of LLL in developing economies, exploring its capacity to empower individuals, enhance the resilience and adaptability of the workforce, and ultimately drive sustainable national development.

Recent scholarly and institutional reports consistently underscore the importance of LLL in building economic resilience and alleviating poverty (World Bank, 2025). For instance, major international bodies emphasize that closing the skills deficit is fundamental for fostering job creation and ensuring economic stability across regions such as Sub-Saharan Africa and South Asia (IMF, 2022; World Bank, 2025). Similarly, organizations dedicated to global education highlight the transformative potential of LLL in empowering citizens and catalyzing societal change (UNESCO, 2020). By strategically integrating LLL into national educational policies and enterprise-level training programs, developing economies can proactively prepare their human capital for the complex demands of the twenty-first-century labor market (Zuo, 2025).

This research provides a comprehensive analysis of the mechanisms through which LLL can effectively bridge skill gaps. Drawing upon recent empirical evidence and policy recommendations, the study seeks to inform key stakeholders policymakers, educators, and industry leaders on the most effective strategies to promote continuous learning and ensure sustained economic growth.

Statement of the Problem

Despite notable advancements in education and workforce development, a significant challenge persists in many developing economies: the presence of substantial skill gaps that actively impede economic growth and social development (BCG, 2016). These deficits are particularly acute in high-demand areas such as digital literacy, advanced technical skills, and specialized vocational training. The resulting misalignment between the skills possessed by the workforce and the evolving requirements of the labor market leads to elevated

rates of unemployment and underemployment, alongside a measurable reduction in overall productivity (IMF, 2022).

While LLL has been widely recognized as a promising solution to address these skill mismatches, its implementation in developing economies is fraught with numerous, interconnected challenges (Yazici, 2015). These include systemic issues such as limited access to quality educational resources, chronic underfunding, inadequate physical and digital infrastructure, and a general lack of public awareness regarding the benefits of continuous learning (World Bank, 2025).

Consequently, this study is designed to investigate the precise role of LLL in bridging skill gaps in developing economies. It aims to systematically identify the principal barriers to effective LLL implementation and propose evidence-based strategies to overcome these obstacles. By achieving these aims, the research intends to deliver actionable insights for policymakers, educators, and stakeholders, thereby enhancing the skill development landscape and fostering sustainable economic growth.

Conceptual Framework and Significance of Lifelong Learning

Defining Lifelong Learning

Lifelong learning (LLL) is conceptually defined as the continuous, voluntary, and self-motivated pursuit of knowledge and skills throughout an individual's entire life (Thwe & Kálmán, 2023). It is a holistic concept that transcends traditional formal schooling, encompassing a spectrum of learning modalities:

- i** Continuous Education: LLL is an ongoing process, not restricted to early life or initial formal education. It necessitates the continual updating and acquisition of new knowledge and competencies to remain relevant in a dynamic world (UNESCO, 2020).
- ii** Self-Directed Learning: The individual assumes agency in identifying their specific learning needs, setting goals, sourcing appropriate resources, and evaluating their own progress (Thwe & Kálmán, 2023).
- iii** Flexibility and Accessibility: LLL accommodates diverse learning styles and needs through various flexible modes, including online courses, vocational training, workshops, and informal self-study (ILO, 2018).
- iv** Holistic Development: The focus extends beyond mere professional competence to encompass overall personal, social, and intellectual growth, thereby fostering a culture of continuous self-improvement (WEF, 2017).

Significance in Developing Economies

In developing countries, LLL assumes a particularly critical function in addressing the unique socio-economic challenges they face:

Role of Lifelong Learning	Impact on Developing Economies	Supporting Citation
Enhancing Employability	Facilitates re-skilling and up-skilling, ensuring workers remain competitive in rapidly changing sectors (e.g., IT, renewable energy). Increases earning potential and career advancement opportunities.	Zuo (2025)
Promoting Economic Growth	A skilled workforce drives increased productivity, which is essential for national economic growth. Fosters a culture of innovation, enhancing global competitiveness.	OECD (2020)
Reducing Unemployment	Equips individuals with skills for emerging industries, supporting job creation and enabling smoother career transitions during economic shifts.	WEF (2025)
Improving Social Mobility	Provides equitable access to education for all, including marginalized groups, empowering them to participate fully in the economy and improve their socio-economic status.	World Bank (2025)
Addressing Skills Mismatches	Allows for the tailoring of training programs to meet specific industry needs, ensuring the relevance of skills taught through collaborative approaches with the private sector.	BCG (2016)
Fostering a Learning Culture	Encourages continuous self-improvement and contributes to community development by fostering social cohesion through shared educational experiences.	UNESCO (2020)

Barriers to the Implementation of Lifelong Learning

The effective implementation of LLL strategies in developing economies is frequently hampered by a confluence of systemic and

structural challenges (Yazici, 2015). These barriers require concerted attention from all stakeholders:

1. Limited Access to Education

- i Geographical Barriers: Individuals residing in remote or rural areas often face significant challenges in accessing educational institutions and necessary resources (World Vision, 2025).
- ii Economic Barriers: Financial constraints, including tuition fees and opportunity costs (lost wages), prevent many from affording essential education and training programs (World Bank, 2025).
- iii Gender Inequality: Persistent cultural norms and practices frequently restrict women's access to educational and LLL opportunities, limiting the potential of half the workforce (ACS College, 2020).

2. Inadequate Funding and Investment

- i Insufficient Government Budgets: Many governments allocate inadequate financial resources to education and training, thereby limiting the scope, quality, and reach of LLL initiatives (Korshunov & Gaponova, 2017).
- ii Lack of Private Sector Investment: A shortage of private sector engagement and investment in workforce training exacerbates the funding gap, placing undue burden on public resources (OECD, 2020).

3. Infrastructural Constraints

- i Poor Physical and Digital Infrastructure: Inadequate infrastructure, particularly the lack of reliable internet connectivity and modern learning facilities, severely impedes the delivery of effective LLL programs, especially those relying on digital platforms (Yazici, 2015).
- ii Outdated Technology: Many educational institutions operate with outdated technology and equipment, which are essential for delivering the quality, relevant education and training required by modern industries (Thwe & Kálmán, 2023).

4. Lack of Awareness and Cultural Attitudes

- i Low Public Awareness: A significant portion of the population remains unaware of the tangible benefits of LLL and the available opportunities, leading to low participation rates (World Vision, 2025).
- ii Cultural Resistance: In some cultural contexts, there is a lack of emphasis on continuous education, and LLL is not sufficiently

prioritized, often due to traditional mindsets that resist new learning methods and technologies (Yazici, 2015).

Evaluation of Existing Lifelong Learning Initiatives

Lifelong learning initiatives in developing economies present a mixed landscape of unique challenges and significant opportunities for human capital development. An evaluation of current policies and programs reveals both areas of success and persistent shortcomings:

Effectiveness of Current Policies and Programs

- i Access and Inclusivity: Many programs have successfully increased access to education, particularly for historically marginalized groups, such as women and rural populations, demonstrating a positive trend toward equity (ILO, 2018).
- ii Quality of Education: While improvements in educational quality are evident, systemic issues such as outdated infrastructure and a lack of modern technology continue to pose substantial challenges to the delivery of high-quality LLL (Thwe & Kálmán, 2023).
- iii Alignment with Industry Needs: Certain successful programs have demonstrated the capacity to align their curricula closely with industry demands, thereby providing the workforce with highly relevant and marketable skills (BCG, 2016).
- iv Sustainability: A major concern is the inconsistent funding and resource allocation for LLL programs, which frequently undermines the long-term sustainability and ultimate impact of these crucial initiatives (Korshunov & Gaponova, 2017).

Best Practices and Lessons Learned

Effective LLL initiatives in developing contexts share several common characteristics:

1. Community Engagement: Successful programs are deeply rooted in community engagement and foster strong partnerships with local organizations, ensuring that the initiatives are culturally appropriate and directly relevant to local needs (World Vision, 2025).
2. Flexible Learning Models: Programs that offer flexible modalities, such as blended learning, online courses, and part-time classes, consistently achieve higher participation rates, as they better accommodate the schedules and needs of working adults (ILO, 2018).
3. Strong Government Support: Sustained success is contingent upon robust government support and policies that unequivocally prioritize LLL. This includes ensuring adequate

funding, developing necessary infrastructure, and establishing supportive regulatory frameworks (Korshunov & Gaponova, 2017).

4. **Private Sector Involvement:** Active collaboration with the private sector is essential, as it provides supplementary resources and ensures that the skills being taught are directly aligned with current market demands and future industry trends (OECD, 2020).
5. **Monitoring and Evaluation:** Regular, rigorous monitoring and evaluation of program outcomes are critical for identifying areas for continuous improvement and ensuring that the initiatives are achieving their intended developmental and economic objectives (World Bank, 2025).

Conclusion

Lifelong learning is not merely an educational option but a fundamental necessity for developing economies seeking to navigate the complexities of the modern global landscape. By systematically addressing the barriers of access, funding, infrastructure, and awareness, and by implementing the strategic recommendations outlined, these nations can successfully cultivate a skilled, adaptable, and resilient workforce. The commitment to LLL is, therefore, a direct investment in sustainable economic growth, social mobility, and the long-term prosperity of the developing world.

Strategies for Enhancing Lifelong Learning

Enhancing lifelong learning in developing economies necessitates a comprehensive, multi-stakeholder approach designed to systematically dismantle the identified barriers and cultivate a pervasive culture of continuous learning. The following strategic recommendations are proposed for key actors:

Recommendations for Policymakers

1. **Increase and Diversify Funding:** Policymakers must dedicate a significant and consistent portion of the national budget to LLL initiatives. Furthermore, they should actively foster Public-Private Partnerships (PPPs) to co-fund and support LLL projects, thereby diversifying the financial base (OECD, 2020).
2. **Develop Inclusive and Equitable Policies:** Policies must be designed to guarantee equal access to LLL opportunities for all citizens, with special attention paid to marginalized groups, women, and rural populations. Crucially, this includes investing in

robust digital infrastructure to support online learning and effectively bridge the digital divide (World Bank, 2025).

3. **Align Education with Industry Needs:** Curricula must be regularly updated to reflect current industry demands and emerging technological advancements. The establishment or strengthening of Sector Skills Councils is vital for systematically identifying and addressing specific skill gaps across various economic sectors (BCG, 2016).
4. **Promote a Culture of Continuous Learning:** National awareness campaigns should be launched to underscore the importance of LLL. Governments should also provide incentives, such as tax breaks or subsidies, for businesses that invest proactively in employee training and development (WEF, 2017).

Recommendations for Educators

1. **Adopt Innovative Teaching Methods:** Educators should move toward blended learning models that combine traditional instruction with online courses and practical training. A strong emphasis should be placed on experiential learning through internships, apprenticeships, and project-based work (Thwe & Kálmán, 2023).
2. **Ensure Continuous Professional Development (CPD):** Educators must engage in ongoing CPD to remain current with the latest pedagogical methods and industry trends. Implementing mentorship programs can further support the professional growth of teaching staff (UNESCO, 2020).
3. **Create Flexible Learning Pathways:** Educational institutions should develop modular courses that allow learners to customize their studies based on personal interests and career goals. Furthermore, robust systems for the Recognition of Prior Learning (RPL) must be implemented to credit existing work experience and facilitate adult re-entry into education (ILO, 2018).

Recommendations for Stakeholders (Industry and Community)

1. **Foster Robust Collaboration:** Industry and academia must forge strong partnerships to co-design relevant training programs and provide real-world learning opportunities. Community organizations should also be engaged to support and promote LLL at the grassroots level (World Vision, 2025).
2. **Leverage Technology for Accessibility:** Stakeholders should invest in and expand e-learning platforms that offer accessible and affordable courses. The utilization of mobile technology is particularly crucial for reaching learners in remote areas where

traditional educational infrastructure is often lacking (Yazici, 2015).

3. Monitor and Evaluate Impact: Regular impact assessments of LLL programs, utilizing surveys, feedback, and performance metrics, are essential. The findings from these evaluations must be used to continuously refine and adapt LLL programs to ensure they effectively meet the evolving needs of both learners and industries (World Bank, 2025).

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RELATIONSHIP OF MOTIVATION FOR STUDYING WITH PROFESSIONAL QUALIFICATIONS IN A ROMANIAN PRE-SCHOOL TEACHERS SAMPLE

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Abstract: *The present study sought to investigate the aspects of academic motivation using the MUSIC scale. The hypothesis was that perceptions of own motivation for study are related to the professional qualifications already achieved. The sample of this study consisted of a voluntary group of 98 students, all of them already working as preschool teachers, mainly enrolled in the Master's Programs: Educational Management - first and second year and Psychopedagogy of Early Education - first and second year. The study had a cross-sectional design. Two types of statistical analyses were performed: Spearman correlation and GLM multivariate analysis. Interpretation of results from this study suggested that the hypothesis of the study was only partially confirmed, in the correlational analysis only three motivation dimensions presented statistically significant relationships and in the second analysis only Interest dimension was statistically significantly influenced by the professional qualification already obtained (the Grad_nr. variable). It is considered that the difference between significant results obtained using correlation analysis and GLM multivariate analysis is due to the way these analyses work, the first one considers the whole group and the second one tests the prediction in each subgroup of the sample. But, even considering this limitation, results obtained in this study indicate that professional development can be a useful indicator for further motivation to improve themselves as professionals and for making efforts to obtain a higher professional qualification.*

Keywords: *motivation; professional qualification; pre-school teacher.*

Background

Motivation for study implies the drive toward acquiring knowledge, seeking training, and achieving qualifications. The typical factors can

be discussed using the intrinsic-extrinsic classification of the motivation. Examples of intrinsic motivation for preschool teachers could be a need for personal growth, belief that education and teaching have a positive impact on own person. Examples of extrinsic motivation most often refer to external rewards, salary or other benefits but also to avoiding possible negative consequences for not complying with institutional or professional requirements. One theory that uses this classification is the Self-Determination Theory (Ryan & Deci, 2000) that, can be also used to study interest in learning and the path of professional development.

Motivation for preschool teacher career is a complex issue (Shen & Luen, 2022). From start it should be clarified that about teachers' motivation can be discussed from at least two points of view. First would be the motivation to enter the pre-school teacher career (Tokić, 2018) and second would be the motivation to enhance own abilities during such a career. This study is mainly focused on the second variant because despite the fact that the sample is referring to students, all of them are already working in the domain of education. Professional qualifications may include any credentials in early childhood education such as specialized training programs ended with a certification or academic degrees (bachelor or master). These are seen as means that improve pedagogical abilities that are required or in relation with existing or expected national standards. Formal education is not always related to a better teaching performance and one study found that only teaching experience is related to improved teacher performance (Agilda et al., 2025).

Different variables can have an influence on professional development of preschool teachers. Education level can be an important variable in relation with motivation oriented toward professional improvement, although there could be a lag between motivation level and professional development activities (Nedimović & Đorđev, 2025). Gender is another variable that can prove to be a relevant variable that has an effect on preschool teachers (Erden et al., 2011). Regarding the relationship between motivation and professional experience in one study concerning preschool teachers, motivation is found to be higher for younger teachers. In this study it was determined that teachers below 10 years of seniority presented a significant difference in motivation comparing older teacher colleagues (11+ years of professional seniority) (Saira et al., 2023). Type of activities of professional development or perception of them have been found to be other relevant variables. Teachers can prefer informal activities against formal activities and participation can be higher when teachers perceive that the activity is useful (Múñez et al., 2017). In a more

actual study is evidenced the relationship between prosocial motivation with emotional support competence underlining the complexity of the subject that is recommended to be explored in future studies using a longitudinal design and taking in account the impact of cultural context. Also, this study highlights the fact that is possible, career growth not have a linear development (Lin et al., 2025).

For early education teachers, training program programs have a positive impact on professional development improving multiple aspects such as: motivation, skills or professional knowledge and skills (Hyseni Duraku et al., 2022).

Despite numerous studies that are following different variables, quantitative studies that investigate in a preschool teachers' sample the relationship between motivation and professional development offer a fragmented image in which is difficult to discern the impact of each variable so that any new study could be useful to some extent for adding new results to this important social and personal topic. Also, a recent systematic review (Lazarides et al., 2025) that initially was following 1607 records, eventually found only 16 eligible studies and concluded that there is a scarcity of studies that investigate the mediational processes between teacher motivation and their behavior.

Hypothesis

Perceptions of own motivation for study are related to the professional qualifications already achieved in a preschool teacher's sample.

Research Methods

Sample

At the beginning, the sample consisted of 215 people, with an average age of 34.27 years ($SD = 9,670$); minimum age was 21 years and maximum 55 years, the group included 204 females and 11 males, students in the Master's Programs: Educational Management - first and second year and Psychopedagogy of Early Education - first and second year and three students in the field of science of education. These individuals' classes were invited to complete the questionnaire of this research. The questionnaire was electronically distributed by Google Forms.

From this sample, in this study were selected only respondents that were teaching at preschool level, 98 females, with an average age of 31.52 years ($SD = 8.320$); minimum age was 21 years and maximum 52 years. the group included students in the Master's Programs: Educational Management - first and second year and Psychopedagogy of Early Education - first and second year and one student in the field of science of education.

Table 1. Sex * Specializarea Crosstabulation
Count

	Specializarea					Total
	ME anul 1	ME anul 2	PETSM anul 1	PETSM anul 2	PIPP anul 1	
Sex Feminin	28	16	21	32	1	98
Total	28	16	21	32	1	98

Instruments

The MUSIC inventory proposes a motivation model with five main components: empowerment, utility, success, interest and care. The MUSIC motivation model (Jones, 2009, 2018) can be used in any field at any class level. Later, the inventory was modified and were developed shorter versions (of 20 or 19 items) but in this study the original 26 items inventory was used. The inventory uses a 1 to 6 rating scale (from „Strongly disagree” to „Strongly agree”), each number being associated a verbal description. Each principle is measured by a number of items:

Empowerment score = (item 2 + item 8 + item 12 + item 17 + item 26) / 5

Usefulness score = (item 3 + item 5 + item 19 + item 21 + item 23) / 5

Success score = (item 7 + item 10 + item 14 + item 18) / 4

Interest score = (item 1 + item 6 + item 9 + item 11 + item 13 + item 15) / 6

Caring score = (item 4 + item 16 + item 20 + item 22 + item 24 + item 25) / 6

The inventory was used in several large studies (Jones et al., 2021, 2022; Jones & Wilkins, 2023) and also in recent ones (Resendiz-Calderón et al., 2024, 2024; Suzuki et al., 2024)

For this research the MUSIC inventory was translated by two translators in Romanian; these translations were merged through a synthesis by a committee (two translators, previously mentioned, and an expert in the field) and finally, the Romanian version was translated again in English by another translator and a second expert in the field.

Research design

This study follows a cross-sectional design.

Results

Considering the hypothesis of this study were used two types of analyses, Spearman correlation and GLM multivariate analysis.

In both analyses next variables were used; for each dimension of the MUSIC scale scores were calculated and the Grad_nr variable was converted (0-none, 1-“definitivat”, 2-“grad 2” and 3-“grad1”). Variables have not presented a normal distribution and this determined the statistical analyses used.

Table 2. Correlations Motivation scales with professional qualification variable (Grad_nr)

		Empowerment_score	Usefulness_score	Success_score	Interest_score	Caring_score
Spearman's rho	Correlation Coefficient	,107	,130	,204*	,273**	,230*
	Grad_nr Sig. (2-tailed)	,296	,200	,044	,007	,022
	N	98	98	98	98	98

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

A multivariate general linear model was conducted to examine the effect of Grad_nr variable on motivation dimensions from MUSIC scale. The overall multivariate effect of Grad_nr variable was significant, Pillai's Trace = .349, $F = 2424$, $p = .003$.

Table 3. Descriptive Statistics for the 5 scales of the MUSIC inventory

	Grad_nr	Mean	Std. Deviation	N
Empowerment_score	,00	4,9926	1,26428	27
	1,00	5,2286	,87869	35
	2,00	5,5636	,41779	11
	3,00	5,4400	,53229	25
	Total	5,2551	,90896	98
Usefulness_score	,00	5,1481	1,19819	27
	1,00	5,5200	,88011	35
	2,00	5,8909	,16404	11
	3,00	5,5520	,50093	25
	Total	5,4673	,87905	98
Success_score	,00	4,9815	1,16629	27
	1,00	5,3571	,83421	35
	2,00	5,4773	,52979	11
	3,00	5,5900	,46704	25
	Total	5,3265	,86335	98
Interest_score	,00	5,0185	1,11740	27
	1,00	5,4619	,93243	35
	2,00	5,9091	,17262	11
	3,00	5,6267	,40046	25
	Total	5,4320	,87502	98
Caring_score	,00	5,2840	1,22458	27
	1,00	5,6143	,89914	35
	2,00	5,9697	,10050	11
	3,00	5,8133	,34129	25
	Total	5,6139	,87755	98

Table 4. Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Empowerment_score	3,787a	3	1,262	1,554	,206
	Usefulness_score	5,001b	3	1,667	2,240	,089
	Success_score	5,233c	3	1,744	2,445	,069
	Interest_score	8,099d	3	2,700	3,835	,012
	Caring_score	5,326e	3	1,775	2,406	,072
Intercept	Empowerment_score	2292,376	1	2292,376	2822,110	,000
	Usefulness_score	2487,813	1	2487,813	3342,931	,000
	Success_score	2331,662	1	2331,662	3267,956	,000

Grad_nr	Interest_score	2466,508	1	2466,508	3503,873	,000
	Caring_score	2617,781	1	2617,781	3547,048	,000
	Empowerment_score	3,787	3	1,262	1,554	,206
	Usefulness_score	5,001	3	1,667	2,240	,089
	Success_score	5,233	3	1,744	2,445	,069
Error	Interest_score	8,099	3	2,700	3,835	,012
	Caring_score	5,326	3	1,775	2,406	,072
	Empowerment_score	76,355	94	,812		
	Usefulness_score	69,955	94	,744		
	Success_score	67,068	94	,713		
Total	Interest_score	66,170	94	,704		
	Caring_score	69,374	94	,738		
	Empowerment_score	2786,520	98			
	Usefulness_score	3004,360	98			
	Success_score	2852,750	98			
Corrected Total	Interest_score	2965,889	98			
	Caring_score	3163,306	98			
	Empowerment_score	80,142	97			
	Usefulness_score	74,956	97			
	Success_score	72,301	97			
	Interest_score	74,269	97			
	Caring_score	74,700	97			

a. R Squared = ,047 (Adjusted R Squared = ,017)

b. R Squared = ,067 (Adjusted R Squared = ,037)

c. R Squared = ,072 (Adjusted R Squared = ,043)

d. R Squared = ,109 (Adjusted R Squared = ,081)

e. R Squared = ,071 (Adjusted R Squared = ,042)

Because only Interest dimension presented a significant p value in Table 4, in Table 5 is presented a post-hoc analysis (Tukey) only for this variable and, are included only the significant differences (between first subgroup and all other 3 subgroups).

Table 5. Multiple Comparisons
Tukey HSD

Dependent Variable	(I) Grad_nr	(J) Grad_nr	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Interest_score	,00	1,00	-,4434	,21491	,173	-1,0055	,1187
		2,00	-,8906*	,30011	,020	-1,6755	-,1056
		3,00	-,6081	,23287	,051	-1,2172	,0009

Based on observed means.

The error term is Mean Square (Error) = ,738.

*. The mean difference is significant at the ,05 level.

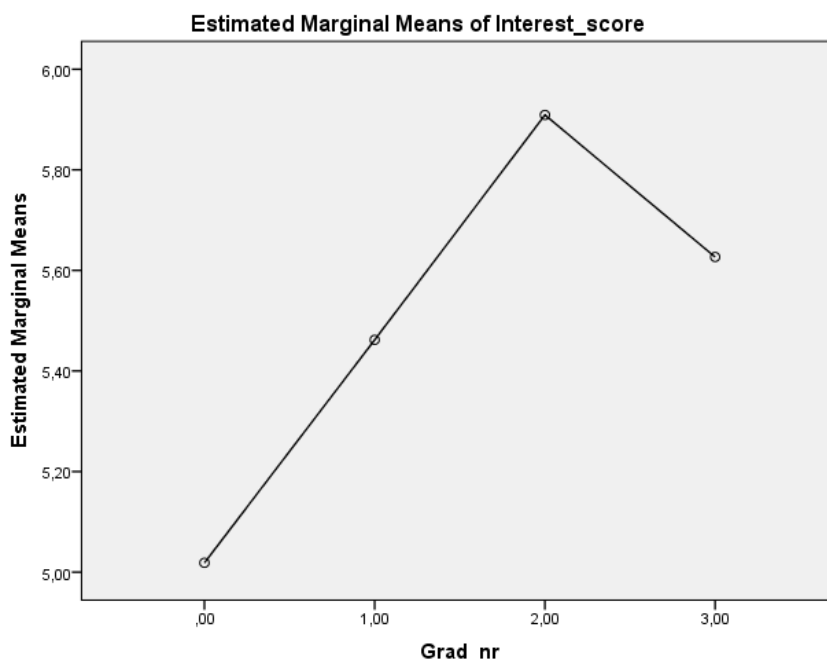


Figure 1. Relationship of Interest dimension (MUSIC scale) with professional qualifications (Grad_nr)

Except for the Success dimension for which there was a linear relationship, for all the remaining dimensions of MUSIC scale, the last sub-group (3-Grad 1) presented a similar pattern as in Figure 1.

Discussion

Hypothesis of this study is only partially confirmed. For overall group the association between hypothesis variables was confirmed for three dimensions: success, interest and caring. For all these three dimensions the relationship was a significant positive correlation. These results suggest that between Grad_nr variable and these three variables the relationship is mostly a linear one.

Considering the second analysis, the GLM multivariate, one difference is that it is a regression analysis and is trying not only to find a significant relationship between variables but even more, to establish the impact of independent variable on the dependent variables. In the case of this study the interest was to find out if professional

qualifications, already obtained, influence the motivation to follow further academic programs (bachelor or master degrees). In literature is more common to find motivation as the independent variable that influences teacher career development (Saira et al., 2023) but in this study the opposite was considered because although this sample is composed of students, these students already are working as teachers and they only complete their academic preparation in the domain of education. So that, through this second type of statistical analysis it was addressed the question if teachers' professional qualifications influence their motivation to continue academic preparation in education area. Although the correlation analysis indicated that higher professional qualifications are associated with a higher motivation, the second analysis indicated that for most dimensions of the motivation scale the sub-group with highest professional qualifications (grad 1) presented a lower motivation for academic study comparing the previous (and inferior) professional qualification (grad 2) but higher than lower professional qualifications („definitivat” or without any qualification; of course, except diplomas obtained in education domain, and that allows them to be teachers). The only exceptions from this data trend can be observed for the „success” dimension where, the higher the professional qualifications the greater the motivation. This dimension of MUSIC scale comprises of 4 questions (number: 7, 10, 14, 18) that were asking if students considered that can successfully manage their academic activities/duties/grades (Annex).

The difference between significant results obtained used by correlation analysis and GLM multivariate analysis is due to the way this analyses work, the first one considers the whole group and the second one tests the prediction in each subgroup of the sample.

Conclusion

Motivation of teachers is an important issue and is oftenly studied in relation with motivation to enter teaching carreer and to develop it by getting knowledge, skills through professioanl training and qualifications but despite this importance there still are needed more studies to fully undestand all the possible relationships between motivation and other relevant variables for teachers. Also, it is possible results be different in analysing different types of teachers, this study being focused only on preschool teachers. But for this sample results obtained in this study indicate that professional development can be an useful indicator for further motivation to improve themselves and for making efforts to get a higher professional qualification.

MUSIC Inventory

Annex

- To be administered while the student is enrolled in college
- Use the instructions below. Title the survey following the directions in a prior page of this User Guide. Also, use the directions on a prior page for how to format the 1 to 6 scale.

Instructions

Thinking about the [insert name of major or program] courses you have taken and are currently taking in your academic major (i.e., [insert specific majors]), please rate your level of agreement or disagreement with the following statements using the following scale:

1 Strongly disagree	2 Disagree	3 Somewhat disagree	4 Somewhat agree	5 Agree	6 Strongly agree

There are no right or wrong answers for these questions. Please answer them honestly. Some of the questions might seem repetitive, but it is important that you answer them all to obtain the best possible results.

Also, note that the word "coursework" refers to anything that you did in these courses, including assignment, activities, readings, etc.

- _____ 1. The coursework holds my attention.
- _____ 2. I have the opportunity to decide for myself how to meet course goals.
- _____ 3. In general, the coursework is useful to me.
- _____ 4. The instructors are available to answer my questions about the coursework.
- _____ 5. The coursework is beneficial to me.
- _____ 6. The instructional methods used in the courses hold my attention.
- _____ 7. I am confident that I can succeed in the coursework.
- _____ 8. I have the freedom to complete the coursework my own way.
- _____ 9. I enjoy the instructional methods used in the courses.
- _____ 10. I feel that I can be successful in meeting the academic challenges in the courses.
- _____ 11. The instructional methods engage me in the courses.
- _____ 12. I have options in how to achieve the goals of the courses.
- _____ 13. I enjoy completing the coursework.
- _____ 14. I am capable of getting a high grade in the courses.
- _____ 15. The coursework is interesting to me.
- _____ 16. The instructors are willing to assist me if I need help in a course.
- _____ 17. I have control over how I learn the course content.
- _____ 18. Throughout the courses, I have felt that I could be successful on the coursework.
- _____ 19. I find the coursework to be relevant to my future.
- _____ 20. The instructors care about how well I do in their courses.
- _____ 21. I will be able to use the knowledge I gain in the courses.
- _____ 22. The instructors are respectful of me.
- _____ 23. The knowledge I gain in the courses is important for my future.
- _____ 24. The instructors are friendly.
- _____ 25. I believe that the instructors care about my feelings.
- _____ 26. I have flexibility in what I am allowed to do in the courses.

(Jones, 2022)

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**MENTORING IN KINDERGARTENS. EXPLORING THE
VIEWS OF KINDERGARTEN PRINCIPALS ON THE
CHARACTERISTICS OF AN EFFECTIVE MENTOR AND THE
STRATEGIES FOLLOWED IN THE INTEGRATION PROCESS
OF NEWLY APPOINTED TEACHERS**

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Abstract: *This study aims to investigate the views of kindergarten principals regarding the characteristics of an effective mentor and the strategies followed in the integration process of newly appointed teachers. By conducting qualitative research, the views on this topic of 15 kindergarten principals were explored using the research tool of semi-structured interviews. From the interviews' processing, it emerged that kindergarten heads attribute to the effective mentor the characteristics of willingness, developed communication skills, and a positive attitude towards the mentored. In contrast, the training of mentors is considered a necessary condition for the effective performance of their role. In the process of smooth adaptation and integration of newly appointed teachers according to kindergarten supervisors, as strategies followed, the building of a relationship of trust and respect between mentor and mentee, the utilization of the mentor's communication skills, as well as the good mood and the time that an effective mentor devotes to the mentoring process in conjunction with the support of the institution by the school contribute to the process.*

Keywords: *mentoring; kindergarten supervisors; characteristics of an effective mentor; newly appointed teachers; mentoring strategies.*

Introduction

Nowadays, mentoring is a practice that has been increasingly used at all levels of education, from pre-school to higher education. For newly appointed teachers in kindergartens in particular, mentoring can be particularly useful, and if implemented effectively can offer guidance and support on many levels.

More specifically, in the phase of integration into the new working environment, mentoring can help newly appointed teachers to adapt smoothly to everyday life, the rules of operation, and the school's demands. In addition, as preschool education requires specific knowledge and skills, through mentoring, newly qualified teachers can be supported in managing professional difficulties and supported in effective strategies for classroom management, cultivating children's behavior, and promoting learning through play, which are key elements of preschool education. Mentoring can also assist in improving the teaching practices of newly qualified teachers by supporting them in creating learning environments that focus on children's needs, interests, and abilities, fostering natural curiosity and learning through exploration.

The first period in pre-school education in particular can be stressful for newly appointed teachers, as they are often called upon to deal with responsibilities, challenges, and various individual problems that arise in the daily school routine. In this context, an effective mentor can support by providing encouragement and assistance in overcoming difficulties, limiting the emotional and professional attrition of newly appointed teachers.

Moreover, mentoring can also enhance the job satisfaction of newly qualified teachers and encourage their professional development by updating their knowledge and improving the quality of their skills. Another important dimension in preschool education is communication with the parents of young learners, which is key to creating a cooperative teacher-parent framework. An effective mentor can help newly qualified teachers develop communication skills and guide them in fostering trust and collaboration with parents.

Characteristics and Skills of an Effective Mentor

In international literature, a plethora of attributes is attributed to the mentor, describing him or her as a 'guide', 'teacher', 'teacher', 'role model', 'supervisor', 'guide', 'facilitator', 'facilitator', 'supporter' (Feiman-Nemser & Parker, 1992). Others describe him as a "mentor" who guides his younger colleagues by utilizing his wisdom and patience (Pappa & Iordanidis, 2017), while Androussou & Tsafos (2013) attribute the term "father figure" to him. According to Salvaras

(2013), the mentor is a role model for the mentee, as he or she educates, supports, and grants knowledge. Gardiner (2010) describes him as a "critical friend", Lopez-Real & Kwan (2005) as a "trusted friend", and Ehrich & Hansford (1999) as a "significant other".

Jenkins (2013) reports that Clutterbuck (2004:53-54) in the first edition of his book *Everyone Needs a Mentor* introduced the acronym of the word MENTOR to convey his characteristic traits. Thus, a mentor:

- Manages the relationship
- Encourages
- Nurtures
- Teaches
- Offers mutual respect
- Responds to the mentee's needs.

Given that mentors are adult educators, it is considered a prerequisite that they are educated in relevant disciplines, trained in the principles of adult education, and know the teaching methodology they adopt to meet their professional needs (Bullough, 2012). Georgopoulou (2017) and McDonald & Flint (2011) state that within the matrix of necessary knowledge of mentors is knowledge of psychology and sociology.

Also, knowledge of the delineation of their role as mentors is considered essential for mentoring to take place so that they maintain their energy levels if mentors seek a dependent relationship with them (Ramani, Gruppen & Kachur, 2006).

Larson (2009) further states that the recognition of the mentor's strengths and weaknesses in a self-awareness context is a prerequisite for effective mentoring as well as a determinant of the mentor's own professional development. At the same time, Larson (2009) mentions willingness as both a prerequisite and a key characteristic of an effective mentor.

The positive attitude of the mentor towards each mentee individual is interpreted by the supportive function of mentoring (Koutsoukos, 2021). According to Rogers (2001, cited in Koutsoukos, 2021), both the full and individualized acceptance of the mentee by the mentor and the respect for the right of the mentored person to settle the issues concerning him/her are considered a prerequisite.

Moreover, in terms of skills, communication skills are considered a required characteristic of the mentor (Koutsoukos, 2021; Good, Halpin & Halpin, 2000; Mee-Lee & Bush, 2003), while Ehrich et al. (2004) refer to the mentor's essential skill of being able to express himself/herself in a clear and understandable context. McLean (2004) refers to the mentor's communication skills focusing on the skill of active listening while considering the ability to advise as a prerequisite of effective mentoring. Kapachtsi (2020) argues that the

communication skills of the mentor are the lever of psychological support for the mentee and the prerequisite for the development of a meaningful relationship between the members involved. Pitney & Ehlers (2004) even point out the value of humor as an asset credited to the mentor's communication skills.

According to Salvaras (2013), to cope with the supportive function of his role, the mentor must have (a) an open mind that will distance him/her from any idea of bias; (b) sensitivity to manage the possible change in the mentors' behavior; (c) empathy to understand how the mentors feel by dealing with the situation from their perspective; (d) authenticity that will help him/her to be his/her authentic self; and (e) non-authoritarianism in order not to hinder the mentor's effort.

Berliner (2001) also states that a prerequisite for smooth cooperation between mentor and mentee is the creation of a trustful climate and the acceptance of the mentee's achievements, while Tickle (2001) refers to the characteristics of honesty and trustworthiness. Regarding the mentor's teaching skills, Kokkos (2005) states that the mentor is the mediator of knowledge between himself and the mentee to facilitate the learning experience, while Matthews (2015) and Koutsoukos (2021) argue that the mentor's role is linked to the teaching of the teachers themselves.

Another area of skills considered important for the mentor is reflection skills (Bell, 2001). Reflection applies to almost the entire mentoring process as it can refer to events that occur during, after, or during the planning of the action (Zhu, 2011). Bell & Mladenovic (2013) linked the mentor's experience to the reflective process during mentoring. Kioulanis, Giamalis, Dimitrakis & Valkanos (2016) showed that if reflection during mentoring is enhanced by using similar techniques, it can assist in the reflective learning process.

The emotional intelligence of the mentor is also considered a key characteristic of effective mentoring (Cherniss, 2007; Rowley, 1999). Illeris (2016) states that the emotional intelligence of the mentor is that which allows the mentor to understand the emotions of the mentees and manage them in a way that is appropriate in terms of facilitating the mentoring process, but at the same time, it is also that which allows the mentor to regulate their own emotions for the benefit of the mentoring relationship. It is also worth mentioning the meaningful nature of participatory learning since its connection with lifelong learning favors the conditions of personal and professional development of the members involved (Koutsoukos, 2021; Young et al., 2004).

However, Benson (2002) points out that many mentors are not born with the skills required for the mentor's role and their participation in

mentoring programs would be considered beneficial and constructive. Connor et al. (2000), argue that these training programs would be more effective if they used a combination of training strategies that allowed the prospective mentors to participate in practical exercises, such as watching video scenarios and/or role-playing. Achinstein, & Davis (2014) and Fokiene et al. (2013) argue concerning the issue of mentor training that it should universally address the matrix of role dimensions.

The same reasoning is followed by Ramani et al. (2006), who point out that mentors need training and remuneration to be able to cope effectively with the tasks of their role. At the same time, they emphasize the need for older and more experienced mentors to also participate in mentoring programs as mentors at this time, as they may wish to change career orientation or bring about career changes while already holding senior positions in the organizations in which they work. Similar findings are reported in the research by Petrovska et al. (2018), which highlights the need for financial incentives for educational mentors. Newly appointed teachers, for their part, demand more frequent and more mentoring presence in classrooms. Moreover, mentors who participate in training programs and receive consistent support feel increased self-esteem, act innovatively, and behave as leaders (Thornton, 2014).

Mentoring Strategies and Newly Appointed Teachers

It is a common assumption that it is difficult for newly appointed teachers to integrate into the classroom, as their university education is mostly based on theoretical foundations, which is an obstacle in the first years of their professional careers. What is observed during this period is that high levels of stress and uncertainty occupy them as they make an intense effort to meet the matrix of responsibilities assigned to them (Marable & Raimondi, 2007).

The role of the mentor is crucial as it contributes to improving human resources (Valasi, 2015). More specifically, concerning newly appointed teachers, the mentor has an advisory role in dealing with potential problems (Hobson et al., 2009 · Marable & Raimondi, 2007 Achinstein & Athanases, 2005) during the new apprentice's adaptation and integration into the school unit, helping to stimulate the new apprentice's self-confidence and professional development (Langdon, 2011; Trikas & Kasimatis, 2017).

According to Achinstein & Davis (2014) and Kutsyuruba et al. (2019), the mentoring strategies followed in terms of smooth adjustment and integration of the newly qualified are as follows:

Networking with other new appointees/mentors/teachers in the organization

Reflection practices through oral or written exchanges

Design and implementation of lessons in a collaborative context and their evaluation

Providing support regarding students' assessment

Creating groups to discover new ideas, reflect and improve educational practices

Exchange of views related to the educational process

Creation of groups to study and exchange contemporary research articles on teaching and learning issues.

Video recording of teachings.

Relationship-building techniques and the development of skills related to active listening, understanding, verbal and non-verbal communication, focusing on achievements, and the process of clear target setting.

The mentor according to Achinstein & Athanases (2005) utilizes a set of techniques such as feedback, observation, engaging the mentee in discussions and reflection processes, model teaching, and co-teaching to help the newly appointed teacher to improve his/her teaching practices, overcome the anxiety and feelings of insecurity that plague them at the beginning of their careers and to adapt their professional expectations to the culture of the school organization they serve.

The conditions that need to be met for the smooth adaptation and integration of new appointees in the school unit according to Kokki (1997 cited in Alabi et al. 2017) are the following: a) Selection and training of individuals to assume the role of mentor, b) mentor-mentee compatibility c) setting goals and expectations from the mentoring process d) establishing mentoring programs.

Fletcher & Strong (2009) cite confidentiality between the parties involved, building a relationship of mutual trust, availability of time, compatibility of the personalities involved, and a mutually agreed and structured mentoring framework as prerequisites for an effective mentoring relationship.

According to research by Makropoulou & Iordanidis (2016), the conditions that must be taken into account for the mentoring project to have qualitative characteristics are the strict criteria for the selection of mentors, their necessary training, the dedication of sufficient time to the mentoring process as well as the support of the mentoring institution within the school community.

Athanasoula-Reppa (2017) argues that the conditions considered necessary for an effective mentoring relationship are the support of the mentoring institution by the school, the mentor-mentee match, the

willingness of the mentor to take on the responsibility of professional support and initiation of the newcomer as well as the willingness of the newcomer to be mentored. Further prerequisites are the building of a cooperative relationship between the mentor and the newcomer, the use of mentoring strategies, and the education/training of the mentor.

Research Methodology

This research aimed to investigate the perceptions of kindergarten principals of the regional unit of Thessaloniki regarding the outline of the dimensions of the profile of an effective mentor and the strategies followed in the integration process of newly appointed teachers.

The research questions to which the survey sought answers are the following:

What are the views of kindergarten principals regarding the personal characteristics, knowledge, and skills of an effective mentor?

What are the kindergarten principals' views regarding the strategies followed by the mentor in terms of smooth adaptation and integration of the newly appointed teachers in the educational organization?

For the needs of the present research, a sample of 15 kindergarten principals of the regional unit of Thessaloniki was selected. The sampling, for practical reasons of facilitating the research process, was done without probability because the participants in the survey met the required characteristics, and their selection was done for reasons of easy access and willingness of these kindergarten principals to participate in the research. Consequently, the survey sample can be described as a convenience sample (Creswell, 2011). In particular, the snowball technique was followed as the sample was formed by the process of accumulation (Isari & Pourkos, 2015).

For data collection, the qualitative research method was chosen as it was considered more effective for the situation as it provided the opportunity to capture the views in a free context, while at the same time, providing the opportunity to interpret and deepen the perceptions of the participants (Tsiolis, 2014). The semi-structured interview was chosen as a research tool due to its flexible nature and the possibility of deepening the issues under investigation (Isari & Pourkos, 2015). To create the interview guide, questions were formulated which were based on previous, related research. In total, 15 semi-structured interviews were conducted remotely using the Google Meet platform, each lasting approximately 20-30 minutes. The interviews were conducted between November and December 2023 and the qualitative content analysis method was used to process the data, specifically thematic analysis. The interview questions were sorted according to the research questions.

Results

Profile of Participating Kindergarten Principals

The sample consisted of 15 kindergarten principals in the regional unit of Thessaloniki. The participants were all women and as shown in Table 1 regarding the age distribution of the participants during the research, the average age was 51.2 years.

Regarding the educational level of the participants, out of the total of 15 kindergarten heads, 9 of them (60%) had a postgraduate degree and 6 of them (40%) had a university degree. Regarding the years of teaching experience, the average was 23.5 years. Regarding the participants' administrative experience, the average number of years of administrative experience is 12.1 years (see Table1)

Table 1. Profile of interview Participants

	Age	Level of Studies	Teaching experience (years)	Administrative experience (years)
S1	56	University degree	25	15
S2	57	University degree	29	15
S3	40	Postgraduate degree	15	4
S4	55	University degree	31	29
S5	38	Postgraduate degree	12	3
S6	56	Postgraduate degree	26	18
S7	45	Postgraduate degree	21	4
S8	39	Postgraduate degree	10	4
S9	60	University degree	37	20
S10	56	University degree	23	17
S11	50	Postgraduate degree	18	14
S12	55	Postgraduate degree	28	12
S13	50	Postgraduate degree	25	9
S14	59	University degree	25	2
S15	52	Postgraduate degree	28	16
Average (years)	51,2	6 University Degree 9 Postgraduate Degree	23,5	12,1

Effective Mentor's Profile

The majority of the participants (100%) as demonstrated in Table 2 indicate that mentor training is considered an essential characteristic to form the profile of an effective mentor, while many responses regarding the characteristics of an effective mentor converge on the characteristic of willingness, communication skills and positive attitude of the mentor towards the mentee (see Table 2)

Table 2. Characteristics of an Effective Mentor

Characteristics of an Effective Mentor	Number of Answers	Percentage
Training	15/15	100%
Willingness	15/15	100%
Communication skills	13/15	86,6%
Positive attitude towards mentees	11/15	73,3%

Strategies Followed for the Smooth Adaptation and Integration of Newly Appointed Teachers

The responses of the participants as to the strategies to be followed by the effective mentor concerning the smooth adjustment and integration of the newly appointed teacher in the educational organization as reflected in Table 3 converge on the formation of a climate of trust and mutual respect between the mentor and the mentee (Spooner Lane, 2017; Kutsyuruba et al., 2019). Typical responses mention that "an effective mentor must have a trusting relationship with the mentee" or "Surely a mentor must approach the newcomer and create a sense of trust" or "... the first and key stage to start from is to gain the trust of the colleague"

The use of communication skills on the part of the mentor, flexibility, and "openness" (Achinstein & Davis, 2014; Kutsyuruba et al., 2019) are mentioned by all participants (100%) as strategies used by the effective mentor to achieve a smooth adjustment of the newly appointed teacher. Typical responses are "The mentor should be very communicative and open to listen to so different issues and concerns that exist in the classroom" or "...I believe that the mentor should be communicative, able to direct the newcomer in the teaching task" (see Table 3)

Table 3. Adaptation Strategies Followed by New Teachers

Adaption Strategies	Number of Answers	Percentages
Building a Climate of Trust and mutual Respect	10/15	66,6%
Use of communication Skills	15/15	100%

The willingness and positive attitude of the mentor as well as the dedication of the mentor's time to the newly appointed (Fletcher & Strong, 2009 Kapachtsi & Papavassiliou, 2018), combined with the release from administrative or pedagogical duties through the support

of the school in the institution (Athanasoula-Repa, 2017) (Table 4) (Table 4) are, according to the majority of the participants, key prerequisites for effective mentoring regarding the smooth adaptation of the new appointee to the educational organization (see Table 4)

Table 4 Effective Mentoring Conditions for New Techers

Conditions for adaptation of new teachers	Number of answers	Percentage
Willingness/Positive mentor Attitude	15/15	100%
Devotion of mentoring Time	15/15	100%
Exemption from administrative/educational Duties	15/15	100%

Typical answers are: "Mood is the alpha and omega" or "If there is a mood of cooperation and generally there is a good mood about how we can all work together in a spirit of cooperation and harmony and calm, everything will go well" or "to have the goodwill and the mood and this is not a process that is done in haste but voluntarily. Only in this way can it be effective" or "First of all, the mentor must devote time to the mentee" or "Have time first of all. I mean, I don't know how in a public school, when there is a full-time schedule, he can mentor at the same time if he is in a different class. To have support from the principal of the school ...Support to whom? To the mentor! So that he can fulfill his role. And for me, there should first be support from the state. Someone who takes on a mentor should have some exemption from classes, from teaching hours to be able to fulfill this role as well. Because otherwise, the colleague is overloaded, and it's not just that he's overloaded, it's that he's going to find the time to do all this if he has the full-time hours?"

Discussion-Conclusions

Nowadays, mentoring is increasingly used in all levels of education, including pre-school education. Especially for newly appointed teachers, mentoring can be a useful tool for their adaptation and smooth functioning in the new workplace. Depending on the

specificities of each situation, mentoring can help to smooth the transition of newly qualified teachers from theory to practice, facilitating their integration into the demanding field of pre-school education and contributing to their professional development.

Based on the results, kindergarten principals attribute to the effective mentor the characteristics of willingness, and developed communication skills. This finding agrees with the findings of the studies of Koutsoukos (2021), Kapachtsi (2020), Branch (2016) Terrion & Leonard (2007), Good, Halpin & Halpin (2000), and Mee-Lee & Bush (2003) in which good communication is central to the ranking of the characteristics of the effective mentor. The respondent's views are interpreted if we consider that based on the literature, the willingness and enthusiasm of the mentor is a prerequisite of a mentoring relationship (Larson, 2009) and help the mentor to maintain increased energy levels in difficult situations (Ehrich et al., 2004).

Kindergarten principals' perceptions regarding mentor communication skills can be interpreted if we consider that effective mentors create conditions of comfort in communication (Lawson, 1989), while poor mentoring outcomes are associated with low-quality communication (McLean, 2004). An interesting finding regarding the characteristics of an effective mentor is the positive attitude of the mentor toward the mentee (Rogers, 2001 cited in Koutsoukos, 2021). However, findings from several studies indicate that mentors demonstrate low tolerance for failure due to the excessive expectations they are driven by regarding their mentees' achievements (Johnson & Cervero, 2004; Terrion & Leonard, 2007). This view of the interviewees can be interpreted if we take into account that the mentor has to accept the mentee as well as show respect for the mentee's right to arrange everything that concerns him/her in an orderly manner (Rogers, 2001, cited in Koutsoukos, 2021).

The perceptions of most kindergarten principals converge on the view that the training of mentors is considered necessary (Ramani et al., 2006 · Bullough, 2012 · Achinstein & Davis, 2014; Fokiene et al., 2013) due to both the ever-changing educational and social environment and as a factor of effective performance of their role (Benson, 2002; Koutsoukos, 2021).

According to the perceptions of kindergarten supervisors regarding the strategies followed by the effective mentor in terms of the smooth adaptation and integration of newly appointed teachers in the educational organization, the findings of the research converge on the formation of a climate of trust and mutual respect (Spooner Lane, 2017; Kutsyuruba et al., 2019), while a significant portion of kindergarten supervisors mention the utilization of the mentor's

communication skills. These findings are corroborated by findings from similar studies such as Kutsyuruba et al. (2019) and Achinstein & Davis (2014). The findings of the study regarding the conditions that need to be met for the mentor to effectively fulfill his/her role in terms of smooth adjustment and integration of the newcomer into the educational organization, mention the willingness and positive attitude of the mentor towards the mentee (Athanasoula-Repa, 2017) as well as the dedication of the mentor's time (Kapachtsi & Papavasiliou, 2018; Fletcher & Strong, 2009) in combination with the school's support to the institution (Athanasoula-Repa, 2017).

All the above opinions of the research participants regarding the strategies followed and the conditions that contribute to the smooth adaptation of the newcomers to the educational organization can be interpreted if we take into account the individual roles of the mentor including characteristics and functions related to both emotional and instrumental support of the mentored (Matthews, 2015).

The present study addresses an issue that has not been the subject of extensive scholarly research in the past, thus contributing to enriching the relevant literature. In terms of the generalizability of the findings of the study, there are limitations arising from the use of purposive sampling, but careful sample selection makes the results usable across a wider population. Moreover, the findings of this research can be complemented by future research attempts that will include: (a) quantitative and qualitative measurements in kindergarten principals to make the sample more representative both in terms of scope and geographical area; (b) conducting a mixed survey of both kindergarten principals and newly appointed teachers; (c) conducting a field survey using the observation method in kindergarten principals; and finally (d) repeating a qualitative survey only in private kindergarten principals.

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LIFELONG LEARNING – FORMATIVE DIMENSIONS AND PEDAGOGICAL IMPLICATIONS

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Abstract: *The rapid transformations characterising contemporary society demand ongoing learning, the revisiting of prior knowledge, and the continuous renewal of skills and competencies. An individual engaged in lifelong learning assumes an active and autonomous role in their own development, demonstrating the capacity to systematically plan learning activities, access and critically evaluate diverse sources of instruction, employ a range of effective learning strategies, and synthesize knowledge across multiple disciplines. Furthermore, such individuals cultivate advanced self-assessment skills and acquire key competencies that not only support personal and professional growth but also enable meaningful contributions to societal advancement, underpinned by autonomy, responsibility, and critical thinking. Lifelong learning is a fundamental prerequisite for navigating the evolving demands of the labor market, addressing professional and social challenges, and managing the multiple transitions that characterise modern life. It supports the development of a reflective mindset and intrinsic motivation for knowledge, thereby strengthening the capacity to adapt to new and complex contexts. A holistic approach to the learning process, sustained across the lifespan, facilitates the acquisition of effective strategies for personal development and continuous professional training, while also promoting the internalisation of civic and ethical values. In this way, the individual becomes not only a flexible and responsive participant in society but also a transformative agent in their own life journey. Modern pedagogy must therefore offer sustained support, relevant resources, and appropriate methodologies to foster this ongoing educational process—advancing an active, integrative, and lifelong model of learning.*

Keywords: *lifelong learning; permanent learning; continuous learning; formal learning; informal learning.*

Introduction

In today's rapidly evolving technological landscape, one fundamental and increasingly essential competence is the ability to learn and adapt to newly required skills and training (OECD, 2007).

The process of learning is grounded in four pillars of education for the future:

- Learning to know: emphasising mastery of learning tools rather than the mere acquisition of structured knowledge.
- Learning to do: preparing individuals for current and future forms of work, including innovation and the adaptation of learning to future workplace environments.
- Learning to live together: promoting peaceful conflict resolution, understanding others and their cultures, fostering community capability, individual competences and capacities, economic resilience, and social inclusion.
- Learning to be: education that contributes to the holistic development of the individual—mind and body, intellect and sensitivity, aesthetic appreciation, and spirituality (Valueva, 2022).

Defining the Concept of Lifelong Learning According to Existing Academic Literature

Lifelong learning is a process through which individuals continuously develop their knowledge, skills, and interests throughout their lives and through various learning opportunities (Richardson, 1978). The primary aim of lifelong learning is to enhance the quality of life by enabling individuals to fully realize their potential. Lifelong learning encompasses both formal and informal learning contexts.

Formal learning includes, but is not limited to, participation in education provided by colleges and universities, as well as community programs, government initiatives, career counselling, and private institutions.

Informal learning includes, but is not limited to, seeking advice from experts, using libraries or other resource centres, and engaging in self-directed learning projects—efforts that contribute significantly to the valorisation of lifelong learning (Pongratz, 1996).

To strengthen lifelong learning competencies, several key activities are essential:

developing a positive attitude toward learning; enhancing reading,

writing, speaking, and listening skills; promoting independent research and study; fostering study competence and the implementation of effective learning strategies; cultivating higher-order thinking skills; and encouraging metacognition, or thinking about one's own thinking (Cotton, 1998).

According to Reinsch (2007), lifelong learning can be conceptualised in three core dimensions:

The entire educational system should be oriented toward the formation of lifelong learners.

Beyond the education system, industries, businesses, and organisations will also require lifelong learning processes.

Consequently, individuals should be self-directed learners.

According to the Dictionary of Pedagogy (2021), lifelong learning—also referred to as continuous, ongoing, or permanent learning—represents an integrative concept encompassing all learning efforts undertaken by an individual throughout their life, to enrich or further develop competences acquired in formal educational settings. Continuous or lifelong learning is considered essential for individuals to effectively navigate the ongoing changes in the labour market, professional and social challenges, the need for multiple career shifts over a lifetime, and various life transitions.

A comprehensive approach to the learning process—extended across the entire lifespan—enables rapid and continuous adaptation to the challenges posed by the new information age and emerging economic principles. This is achieved through the acquisition of advanced techniques for optimizing personal development and engaging in continuous professional training.

The dynamics of societal development demand continuous learning and relearning, along with the constant updating of one's knowledge base. An individual engaged in lifelong learning remains active, capable of planning their own learning activities, learning from various types of instructors under diverse conditions, employing a range of learning strategies, integrating knowledge from multiple domains, and engaging in self-assessment. In doing so, such an individual becomes not only more valuable to society but also to themselves. At present, a wide variety of lifelong learning programs operate worldwide, supported on an ongoing basis by educational institutions and various social organizations (<http://www.lifelong.ro/>) (Bocoş, M., 2021, coord., pp. 903–904).

What Are the Potential Barriers to Lifelong Learning?

Longworth (2003) summarises the obstacles to lifelong learning as follows:

Mental barriers: A weak family culture of learning, low aspirations, low self-esteem, and negative learning experiences during childhood.

Financial barriers: Lack of financial resources to engage in learning processes and absence of adequate study facilities at home.

Access barriers: Geographic distance from educational institutions, which affects a growing number of learners.

Barriers related to learning design: Educational offerings that are not tailored to the needs and characteristics of lifelong learners and fail to adequately consider their individual differences.

Information barriers: Educational service providers offer inadequate information to attract people to learning and fail to ensure access to high-quality counselling regarding lifelong learning opportunities.

What Are the Challenges Facing Educational Systems in Regard to Lifelong Learning?

The National Institute for Adult Continuing Education (NIACE, 2011) outlines a series of challenges that governments face, regardless of political orientation:

Financial: Ensuring effective economic recovery in the aftermath of the global recession.

Demographic: Preparing for a decline in the number of young people entering the labour market over the coming decade, managing a rapidly ageing population, and accommodating increased labour market flexibility at the international level.

Technological: Keeping pace with the innovation and entrepreneurial momentum of global trading partners.

Environmental: Supporting the development of a low-carbon economy and promoting greater sustainability.

Social: Ensuring social justice, community cohesion, and minimising the adverse effects of inequality.

Democratic: Promoting active citizenship and strengthening trust in representative democracy at both local and national levels.

What Competencies Are Necessary for Lifelong Learning?

The European Commission (2007) identified the key competencies required for lifelong learning, which include: communication skills in the mother tongue; communication skills in foreign languages; basic competencies in mathematics; competencies in science and technology; digital competencies; learning-to-learn skills; social and civic competencies; a sense of initiative and entrepreneurship; and cultural awareness and expression.

Hürsen (2011) analysed lifelong learning through the lens of six core competencies:

- Self-management competencies: the ability to make independent decisions for professional development; awareness of deficiencies in one's personal development process; self-assessment in learning; collaborative research; motivation for professional growth and learning new things; taking responsibility within teamwork; active participation in activities; developing creative solutions to challenges in professional life; adapting to new situations; managing projects aimed at professional development; and pursuing continuous study to master new topics.
- Learning competencies: the ability to identify available opportunities for professional development and to recognise necessary learning activities; asking questions during the learning process without hesitation; selecting relevant components and materials when approaching a new topic; resolving problems that may arise during learning; using language effectively in the learning process; and demonstrating empathy.
- Initiative and entrepreneurship competencies: the ability to make decisions on any topic; adapt to changing information in professional life; transform professional development ideas into actionable steps; plan activities that meet professional informational needs; remain goal-oriented; choose appropriate learning environments; apply knowledge to achieve established goals; and generate creative problem-solving suggestions.
- Information acquisition competencies: the ability to communicate effectively during the information-gathering process; express ideas on any topic confidently; utilise online information-access methods; use mobile devices to obtain new information; and employ social media in acquiring information.
- Digital competencies: the ability to use computers to store information, and to access and utilise the internet and other communication tools.
- Decision-making competencies: the ability to evaluate the extent to which one has met set goals; overcome all obstacles hindering professional career development; assess potential risks in the professional development process; and evaluate the time required to learn a new subject.

What Should Teachers Do to Promote Lifelong Learning?

Teachers must support students in acquiring both general lifelong learning skills and, more specifically, metacognitive and self-regulatory learning abilities to help them stay current in their fields of expertise.

In this context, it is recommended to apply instructional methods such as problem-based learning, conscious learning, and reciprocal teaching, all of which have been shown to enhance students' capacity for lifelong learning. These approaches equip learners with metacognitive and self-regulatory tools that are essential to sustaining learning throughout life (Dunlap, 1997).

Teachers have an unprecedented opportunity to instil lifelong learning capabilities in their students. When this opportunity is neglected, education is reduced to learning confined only to the duration of formal studies, rather than extending across the lifespan.

Therefore, teachers must also be fully aware of the power and potential of lifelong learning. With this awareness, integrating students into the lifelong learning process becomes more feasible. Educational processes should be structured in such a way that students are encouraged to learn continuously—not just during their time within the formal education system (Helterbran, 2005).

What Are the Benefits of Lifelong Learning?

Hildebrand D.S. (2008) identified five major benefits of lifelong learning, as outlined below:

- **It Keeps the Mind Active**

As we age, continued learning helps to keep the mind active and improves memory. It is well-established that learning has beneficial effects on the brain. Research has shown that individuals with higher levels of education are less likely to develop dementia in old age.

- **It Builds Self-Confidence**

When someone has not stepped outside their routine for a while, has avoided new challenges, or has not seriously committed to learning something new, the experience can initially feel intimidating. Lifelong learning helps to overcome this fear. It fosters confidence in one's ability to learn and to share knowledge with others, ultimately strengthening belief in oneself and in one's personal and professional contributions.

- **It Enhances Interpersonal Skills**

Learning provides opportunities for social interaction, which significantly enhances interpersonal skills. The learning process

involves engaging with others, as well as developing essential communication skills such as reading, listening, and writing. Strengthening these abilities improves one's capacity to write business letters, create marketing reports, deliver presentations, or have meaningful one-on-one conversations with colleagues.

The most significant benefits of lifelong learning can be summarised as follows:

- **Adaptation to Change**

Perhaps the most important advantage is the ability to adapt to change. A lifelong learner keeps pace with societal developments, remaining aware of shifts in technology, political trends, and financial or economic issues. Such individuals actively seek out opportunities to adopt and integrate new technologies into their lives.

- **Higher Earning Potential**

Another major benefit is increased earning capacity. Workplace promotions are typically awarded to employees who are best trained and most knowledgeable in their field. New job positions and career paths are constantly emerging, and viable candidates are those with the necessary certifications and qualifications. Lifelong learners remain at the forefront of their profession and are ready to seize opportunities as they arise.

- **A More Fulfilling Life**

Ultimately, a significant benefit of lifelong learning is the potential for a more meaningful and enriched life. For individuals who make continuing education a natural part of their lives, the result is often an active, engaged, and purposeful lifestyle. Lifelong learners pursue subjects that interest them, and this intellectual engagement can lead to reduced stress, improved family relationships, and greater overall life satisfaction (Laal & Salamati, 2012).

Conclusion

Lifelong learning is no longer merely an option; it is a necessity for adapting to the demands of a knowledge-based economy, technological transformation, and increasing social and professional mobility. In this context, traditional universities have the responsibility to rethink their role and mission, positioning themselves as open and flexible centres for continuous education. These institutions should offer learning opportunities tailored to the diverse needs of various age groups and levels of experience.

Promoting a culture of lifelong learning contributes not only to enhanced competitiveness and social inclusion but also to the development of a more informed, innovative, and resilient society.

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RECRUITMENT FACTORS AND TEACHING TASK PERFORMANCE OF TEACHERS IN PUBLIC SECONDARY SCHOOLS IN OYO STATE, NIGERIA

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Abstract: *This study examines recruitment factors and teaching task performance among teachers in public secondary schools in Oyo State, Nigeria. Concerns over ineffective teaching, including poor mastery of subject matter, inadequate instructional material use, and insufficient lesson note preparation, necessitated the study. Despite previous research on motivation and facility availability, the issue persists. This study explores recruitment factors, such as personnel needs and recruitment processes, as determinants of teaching task performance. A descriptive survey research design with a mixed-method approach was adopted. The study population included 15,498 teachers and principals, with a sample size of 1,355 respondents selected using a proportionate sampling technique. Data were collected using validated self-developed instruments, the Recruitment Factors Questionnaire (RFQ) and Teachers' Teaching Task Performance Questionnaire (TTTPQ), with Cronbach's Alpha reliability scores of 0.87 and 0.91. Descriptive and inferential statistical tools, including frequency counts, mean, standard deviation, and Pearson Product Moment Correlation (PPMC), were used for data analysis. Findings revealed generally high teaching task performance (weighted mean = 2.81). Recruitment factors such as specialization and qualification were frequently considered, while gender, experience, and additional skills were inconsistently applied. A significant relationship was found between personnel needs and teaching task performance ($r = 0.38$,*

P < 0.05) and between recruitment processes and teaching task performance ($r = 0.34$, $P < 0.05$). The study concludes that structured recruitment enhances teaching effectiveness and recommends a merit-based recruitment process to improve instructional quality in secondary schools.

Keywords: *recruitment factors; personnel needs; recruitment process; teacher teaching task performance.*

Introduction

Teachers' task performance is a substantial to the achievement of secondary school goals and objectives. It could be described as the duties performed by a teacher at a particular period in the school system in achieving the organisational goals. It could also be described as the ability of teachers to combine relevant inputs for the enhancement of teaching and learning processes.

The degree of an achievement to which a teachers fulfill the organisational mission at workplace is called job performance (Cascio, 2020). Performance has been perceived differently by various researchers, but most of the scholars relate performance with measurement of transactional efficiency and effectiveness towards Organisational goals (Stannack, 1996; Barne, 1991).

The performance of a teacher is built up by degree of achievement of a particular target or mission that defines of performance (Cascio, 2020). Certain researchers have identified different thought, attitudes and beliefs of performance as it helps in measurement of input and output efficiency measures that lead to transactional association (Awad and Saad, 2021)

Adepoju (2021) asserted that variables of teachers' teaching task performance such as effective choice of teaching methods, lesson note preparation, effective use of scheme of work, effective supervision, monitoring of students' work and disciplinary ability are virtues which teachers should uphold effectively in the school system. In this regard, the teachers' teaching performance could be measured through annual report of his/her activities in terms of performance in teaching, lesson preparation, lesson presentation, mastery of subject matters, competent, teachers' commitment to job and extra-curricular activities. Other areas of assessment include effective leadership, effective supervision, effective monitoring of students' work, motivation, class control and disciplinary ability of the teachers.

Teaching is one of the core tasks of teachers in the school system as they are expected to prepare lesson notes, use suitable instructional

materials for the lesson, use adequate and appropriate teaching methods to communicate fluently and show a mastery of the subject content during teaching in the classroom. However, this seems not to be the case with some teachers in Oyo State. The teaching task of teachers is one of the crucial indicators of their performance. Ineffective teaching is one of the problems that appear to be associated with the task performance of teachers. The indices of teaching task would be discussed in terms of lesson notes preparation, usage of instructional materials and teaching methodology, which are seen to be germane to teaching activities in secondary schools.

Lesson note is a very significant part of teaching tasks; writing of up-to-date lesson notes always seems to be an issue for disagreement between teachers and the principals. It appears that some teachers have formed the habit of not writing up-to-date lesson notes while some may not even write at all. In so doing, they neglect the implication on their teaching profession. Teaching without lesson notes could hinder the realisation of learning objectives in the classroom. Any teacher that is found in the classroom without a lesson note could be regarded as an accidental teacher because the entire lesson that such a teacher would take may not be systematically arranged and the targeted objectives of the lesson may not be realised. No matter how knowledgeable such a teacher may be in the mastery of the subject matter, when sequential arrangement of thought and systematic delivery of the lesson is missing in a class, the objectives of such lesson may not be totally achieved. So, the teaching task of such a teacher could be regarded as ineffective.

The usage of suitable instructional materials is another aspect of teaching task in secondary schools. Instructional materials are very germane to the realisation of teaching and learning activities in the classroom. These materials make learning to be practical and enable students to see, touch and practice the oral instruction given by a teacher in the classroom. This act results in clear lesson delivery and simplifies the efforts of a teacher (Jamwal, 2017). Some teachers find the usage of instructional materials a difficult task, while others battle with how to choose relevant instructional materials for certain concepts. Even when some teachers attempt to use such materials, they use it ineffectively, displaying it at the wrong time or using it to distract the attention of students. Another problem is that, it appears that some teachers usually display instructional materials that are not readable and lack improvisation techniques. These identified issues and many others could mar the task performance of teachers in secondary schools.

Method of teaching is another index of teaching task that may be responsible for poor task performance of teachers in secondary schools. The right methods of teaching could facilitate teaching effectiveness in schools; some teachers tend to use the same method of teaching in delivering lessons in the classroom, while others become so attached to the same manner of introducing concepts to their students, failing to take into cognisance the individual differences of the students and the modes of evaluation during and after the lesson. This monotony in teaching methodology indicates a lack of dynamism among some teachers in secondary schools. Eventually, this may result to poor task performance of teachers.

The perceived low teaching task performance of teachers in Oyo State secondary schools seems to have resulted into a serious setback for the realisation of secondary schools' education goals and objectives. The situation has deteriorated to the extent that the results of students in external examinations are now a cause of serious worry to educational stakeholders (parents, government and policy makers). The percentage of students who obtained credit passes in a minimum of five subjects including English Language and Mathematics in the examinations conducted by West Africa Examinations Council (WAEC) keeps dwindling yearly. Oyo State, from 2016 to 2019, still maintained 26th position in Nigeria but the State recorded a remarkable achievement by rising to 11th position in 2020 which is commendable but still the performance was deflated to 33rd position in 2021 which seems not too good for a "pacesetter" state that is expected to be found within the range of 1st to 3rd position in the country. The roles of recruitment factors (Personnel needs and recruitment process) in shaping teachers performance seems to be germane in addressing low teaching task performance among teachers in secondary schools.

Recruitment could be described as a positive process of generating a pool of candidates by reaching the right audience suitable to fill a vacancy. This could be possible by considering some factors such as organisational needs, organisational objectives, and the recruitment process. Recruitment factors are very significant to the educational system in order to get qualified applicants that can effectively fill any vacant position within a school system due to the increase in staff retirement, death, turnover and competition within the educational system. The necessary factors that must be considered before recruitment is considered are personnel needs and recruitment process which are the indicators of recruitment factors (Adeyemi, Dumade and Fadare, 2015). These indicators of recruitment factors identified in this study are those factors that could necessitate effective teachers'

recruitment in the school system; these are personnel needs and recruitment process.

Personnel needs are described as the quality, quantity, characteristics and category of workforce that are needed by the education system for effective and greater task performance of teachers. Thus, Ekwoaba (2015) stated that “recruitments based on personnel needs (specialisation, age, gender and qualification) have become essential because individuals need to be attracted on a timely basis, in sufficient numbers and with appropriate qualifications.” For an appropriate recruitment to be made, the needs of the schools are expected to be considered in order to achieve the intended task performance of teachers. There is need to have adequate information on the quality and quantity of staff, the vacant positions and the specialisation by subject that is needed in each school and educational zone so as to recruit the right quality and quantity of teachers to improve teachers’ task performance. The teachers’ characteristics should be clearly defined in terms of qualification, experience, age and gender of any staff to be recruited for effective task performance to be achieved within the school system. Regardless of the economic climate, if the educational system at any level recruiting teachers based on possession of the necessary skills, knowledge, requisite qualification and capabilities to work effectively and efficiently as possible, teachers’ task performance could improve significantly in Oyo State.

Recruitment process is identified in this study as another index that is expected to impact positively on teachers’ task performance if followed to the letter. It is described as the procedure expected to be followed in recruiting teachers into the educational system. The recruitment process seems to be significant to the realisation of the goals and objectives of secondary school education. Section 79 (a) of the National Policy on Education, 2013 edition (Federal Republic of Nigeria, 2013), requires the appointment of academically and professionally qualified persons (Nigeria Certificate in Education and Bachelor Degree in Education) as teachers and head teachers in public secondary schools. In Nigeria, the recruitment process into public schools includes placing advertisements in both the print and electronic media; thereafter, a selection committee is established to screen the applications and then interview the shortlisted candidates. Staying faithful to the practices involved in this process usually ensures that qualified and skilful teachers are brought into the system. Potentially, this would in turn improve teachers’ task performance. Selection is usually based on performance during oral and written interviews. The criteria for selecting new teachers in a school include knowledge of subject matter, physical appearance, verbal ability and medical fitness

(Babarinde, Olujuwon, Abegunrin and Jimoh, 2019; Adeleke and Emunemu, 2024). An established pattern of best practices in the recruitment process in the educational system is expected to produce teachers that would likely be effective in the teaching profession. However, if the process is politicised or marred by favouritism, it may jeopardise the realisation of the educational objectives. The interested applicants for a teaching position are expected to fill and submit an application letter to show interest in the opening, and they may be invited to take an aptitude test and oral interview. The successful applicant would be considered and posted to the school of assignment. Teachers that are recruited without following the due process may not give their best to the teaching profession. If all the necessary processes are not followed to the letter in the recruitment exercise of teachers, this may negatively affect the task performance of such teachers.

Statement of the problem

The problem ineffective teaching performance of secondary school teachers seems to have generated an issue of national discuss among educational stakeholders. There ineffective teaching task of teachers was observed inform of poor mastery of subject matter, poor usage of instructional materials and poor lesson notes preparation. The problem has been persistent among teachers and need urgent attention. The implication of ineffective teaching task could be disastrous if not taking care on time; not only that it can lead to not realization of secondary schools' educational goals and objectives but it can lead to increase in dropout rate among students, confidence and prestige of teaching profession could be reduced, increase in poor academic performance of students and reduction in the transition rate to higher institutions among others. Studies has been caried out on variables such as motivational factors, facility availability and students' interest as variables that could improve effective teaching task of teachers but the problem of ineffective teaching task persist. Recruitment factors measured in terms of personnel needs and recruitment process if follow to the later they are expected to improve teaching task of teachers in secondary schools, therefore the researcher investigated recruitment factors and teaching task performance of teachers in public secondary schools in Oyo State, Nigeria.

Purpose of the study

The study investigated recruitment factor and teaching task performance of teachers in public secondary schools in Oyo State Nigeria. specifically, the study:

- i. established the level of teaching task performance of teachers in public secondary schools in Oyo State
- ii. assessed the frequency in the usage of recruitment factors in public secondary schools in Oyo State and
- iii. established the relationship between personnel needs, recruitment process (recruitment factors) and teaching task performance of teachers in public secondary schools in Oyo State.

Research Questions

The following research questions were raised and answered in the study

- i. What is the level of teaching task performance of teachers in public secondary schools in Oyo State?
- ii. How frequent is recruitment factors being used in the selection of teachers in public secondary schools in Oyo State?

Hypothesis

H0₁: There is no significant relationship between recruitment factors (personnel needs, recruitment process) and teachers' task performance in public secondary schools in Oyo State.

Methodology

The descriptive survey research design using mixed method of data collection was adopted for this study. This was considered appropriate for the study because it provided the strategy for obtaining and describing existing conditions in the study since the information was already in existence. The researcher was not also interested in manipulating variables in the study. Population for this study consists of 15,498 teachers and principals of public secondary schools in Oyo State, Nigeria. The sample size of the respondents for the study is 1,355 (1,296 teachers and 59 principals), proportionate to size sampling technique was adopted to sample 59 schools, 1,296 teachers and the principals were enumerated making 1355 respondents for the study. The instruments for this study were self-developed instruments titled Recruitment Factors Questionnaire (RFQ) and Teachers Teaching Task Performance Questionnaire (TTPQ). Face and content validity of the instruments was achieved by giving the drafted copies of the instruments to experts in the test construction for the review of the contents for necessary corrections and modifications. This is to ensure that the instruments measure what they are meant to measure.

Reliability of the instrument was achieved through a pilot test and Cronbach Alpha test of reliability was used to test the internal consistency of the instruments at 0.05 level of significance, the results 0.87 and 0.91 reliability coefficient. The descriptive statistical tools of frequency counts, simple percentage, mean and standard deviation were used to analyze research questions 1 and 2, the inferential statistical tool of Pearson Product Moment Correlation (PPMC) was used to test hypotheses 1 at $p < 0.05$ level of significance.

Results and discussion

This section presented the results and discussion of findings of this study. The data retrieved from the field through questionnaires were used to generate the results for this study, 1296 instruments were administered to teachers but 1284 (99.1%) were retrieved from the field, that is, 12 questionnaires were not returned by the respondents. Also, 59 questionnaires were administered to school administrators (principals) and were all (100%) returned. The total number of questionnaires that were retrieved from the field were 1343 (99.11%) which was used for data analysis.

Analysis of Research Questions

Research Question 1: What is the level of teaching task performance of teachers in public secondary schools in Oyo State?

Table: Level of teaching task performance of teachers in public secondary schools

S/ N	Items	VH	H	L	VL	Mea n	Std.De v.
Teaching tasks							
1	Preparation of up-to-date lesson note	15 (27.3%)	40 (72.7%)	0 (0.0%)	0 (0.0%)	3.27	0.449
2	Using the appropriate methods of teaching in the class	6 (10.9%)	39 (70.9%)	6 (10.9%)	4 (7.3%)	2.85	0.705
3	Using diverse	8 (14.5)	31 (56.4)	16 (29.1)	0 (0.0%)	2.85	0.650

	methods to make sure that students understand the lesson	%)	%)	%)			
4	Choosing the right instructional material for teaching in the classroom	6 (10.9 %)	38 (69.1 %)	11 (20.0 %)	0 (0.0%)	2.91	0.554
5	Display of the instructional materials for teaching in the classroom	11 (20.0 %)	20 (36, 4%)	24 (43.6 %)	0 (0.0%)	2.76	0.769
6	Improvise on of instructional material for teaching	4 (7.3%)	32 (58.2 %)	17 (30.9 %)	2 (3.6%)	2.69	0.663
7	Using teaching instruction always	10 (18.2 %)	13 (23.6 %)	21 (38.2 %)	11 (20.0 %)	2.40	1.011
Weighted mean						2.81	

Table 1 shows the level of teaching task performance of teachers in public secondary schools in Oyo State. The Table revealed that 40 (72.7%), 39 (70.9%), 38 (69.1%), 32(58.2%) and 31(56.4%) of the respondents affirmed that teachers' task performance was high in terms of preparation of up to date lesson note, using the appropriate methods of teaching in the class, choosing the right instructional material for

teaching in the classroom, improvisation of instructional material for teaching and using diverse methods to make sure that students understand the lesson with mean value of 3.27, 2.85, 2.91, 2.69 and 2.85 respectively but 24 (43.6%) and 21 (38.2%) of the respondents indicated that teachers' task performance was low in the area of display of the instructional materials for teaching in the classroom and using teaching instruction materials in the class with mean value of 2.76 and 2.40 respectively. The weighted mean value for teachers' teaching task performance was 2.81. The weighted mean (2.81) is above 2.50 criterion mean; this implies that teachers' teaching task performance is high in public secondary schools.

The findings of this study is against the findings of Faremi (2021) and Aremu (2010) who found out that teachers' task performance was low in secondary schools, this performance appraisal was adjudged by the administrators and some other significant educational stakeholders. The scholar stressed that poor task performance is not only frustrating to the teachers, administrators and the students but its effects are equally grave on the society in terms of consequences. This result also corroborated the findings of Adepoju (2021). The findings are also in congruent with that of Griffin et al. (2007) positions that task performance of teachers was very high and seem to be favorable and achieved the expectation of educational stakeholders as a result of how well an individual performed the core tasks specified in his or her job description.

Research Question 2: How frequent were recruitment factors (personal needs and recruitment process for recruitment in public secondary schools in Oyo State?

Table 2: Frequent use of recruitment factors (personal needs and recruitment process) for recruiting in secondary schools

S N	Personnel Needs	Always	Sometim es	Rarel y	Never	Mea n	Std.D ev
1	Area of specializat ion	805 (62.7 %)	360 (28.0%)	92 (7.2%)	27 (2.1%)	3.51	0.721
2	Gender considerati on in the process of recruitmen t	229 (17.8 %)	433 (33.7%)	311 (24.2 %)	311 (24.2 %)	2.45	1.044

3	previous experience is required before giving the job	356 (27.7%)	438 (31.4%)	323 (25.2%)	167 (13.0%)	2.77	0.997
4	Age has nothing to do with teachers recruitment	408 (36.7%)	367 (31.8%)	330 (25.7%)	179 (13.9%)	2.78	1.042
5	The recruitment of teachers is based on qualification	821 (63.9%)	319 (24.8%)	100 (7.8%)	44 (3.4%)	3.49	0.782
6	Height is a factor for recruiting teachers	300 (23.4%)	165 (12.9%)	241 (18.8%)	575 (44.8%)	2.15	1.222
7	Other skills possessed is not a prerequisite for recruiting teachers	228 (17.8%)	399 (31.1%)	451 (35.1%)	206 (16.0%)	2.51	0.963
8	Quantity of teachers in a school is a factor for recruitment	132 (10.3%)	248 (19.3%)	588 (45.8%)	316 (24.6%)	2.15	0.910
Weighted mean					2.72		

	Recruitme nt process	Alway s	Someti mes	Rarel y	Never	Mea n	Std.D ev
9	Applicatio n form alone	426 (33.2 %)	295 (23.0%)	200 (15.6 %)	363 (28.3 %)	2.61	1.212
10	Applicatio n - oral interview	559 (43.5 %)	425 (33.1%)	125 (9.7%)	175 (13.6 %)	3.07	1.037
11	Applicatio n-written interview	663 (51.6 %)	446 (34.7%)	133 (10.4 %)	42 (3.3)	3.35	0.794
12	Applicatio n-written interview- oral interview	649 (50.5 %)	473 (36.8%)	130 (10.1 %)	32 (2.5%)	3.35	0.762
13	Applicatio n-aptitude test	465 (36.2 %)	577 (44.9%)	173 (13.5 %)	69 (5.4%)	3.12	0.835
14	Applicatio n-written- oral- aptitude test	368 (28.7 %)	429 (33.4%)	352 (27.4 %)	135 (10.5 %)	2.80	0.971
15	Without application but phone call	113 (8.8%)	186 (14.5%)	247 (19.2 %)	738 (57.5 %)	1.75	1.004
16	Without application but received appointme nt letter from politician	260 (20.2 %)	280 (21.8%)	260 (20.2 %)	484 (37.7 %)	2.25	1.160

17	Receive appointme nt letter from family member without application	179 (13.9 %)	335 (26.1%)	229 (17.8 %)	539 (42.0 %)	2.12	1.108
Weighted Mean						2.34	
Grand							mean
2.24							

Table 4.4 shows the descriptive analysis of how frequent recruitment factor (personnel needs) were used in public secondary schools. From Table 4.4, the larger percentage 821 (63.9%), 805 (62.7%) and 408 (36.7%) of the respondents indicated that the recruitment of teachers was always based on qualification and areas of specialization and that age has nothing to do with teachers' recruitment as shown by the mean value of 3.49, 3.51 and 2.78 respectively. Also, 438 (31.4%) and 433 (33.7%) of the respondents specified that sometimes previous experience was required before being given job and that gender was sometimes considered in the process of recruitment. Meanwhile, 588 (45.8%) and 451 (35.1%) of the respondents indicated that the quantity of teachers in a school was rarely a factor for recruitment and that other skills possessed were rarely prerequisites for recruiting teachers with mean value of 2.15 and 2.51 respectively while 575 (44.8%) indicated that height was never a factor for recruiting teachers in the school system with mean value of 2.15. The weighted mean value for personnel need is 2.72 which is greater than the criterion means of 2.5. This signifies those personnel needs are practices that are sometimes used in the process of recruiting staff into public secondary schools. Table 4.6 further reflects the recruitment process that teachers passed through before being recruited to secondary schools. It revealed that, 663(51.6%), 649(50.5%), 559 (43.5%) and 426 (33.2%) of the respondents indicated that some teachers always pass-through application-written interview, application-written interview-oral interview, application - oral interview and only application as process of recruiting teachers with mean value of 3.12, 2.80 3.35 and 3.35 respectively. It was also indicated that 577 (44.9%), and 429(33.4%) of the respondents indicated that teachers sometimes passed through application-aptitude test and application-written- oral-aptitude test while 738 (57.5%), 539 (42.0%) and 484(37.7%) of the respondents

indicated that teachers never got teaching jobs without application or through phone call, never received an appointment letter from family members without submitting an application and never received an appointment letter from a politician without application. The mean values of 1.75, 2.12 and 2.25 were recorded in this regard. The weighted mean for recruitment process is 2.34. This implies that recruitment process is rarely practiced in public secondary schools as the weighted mean is less than the decision mean of 2.50.

To answer the research question, on how frequent recruitment factors were used to recruits teachers in public secondary schools. The grand mean value for the recruitment factors is 2.24 which was less than 2.5 decisions mean. This implies that recruitment factors (personnel needs and recruitment process) are rarely practiced in recruiting teachers in public secondary schools. This implies that qualified teachers may not be recruited to the public secondary schools if the employers rarely followed the recruitment factors.

The result of this study is in agreement with the findings of Vyas (2011) found out that the current trend is that organizations look for methods of reducing the time and effort in the recruitment process and rarely practice necessary recruitment factors to generate the right teacher. However, Andrews (2020) admonished those methods of team staffing should translate to competitive advantages of a school but it is rarely practiced in the school system.

More so, the result is against the findings of Ofori and Aryeetey (2011) position that recruitment factor is always used to generate a pool of competent individuals to apply for employment within a school system. Evidence has shown that this may likely be so in a school system than smaller organizations in implementing sophisticated recruitment processes with majority of smaller organizations relying on referrals and advertising as their recruitment practices of choice

Testing of Hypotheses

The hypotheses that were formulated were tested at $P < 0.05$ Alpha level.

H₀₁: There is no significant relationship among personnel needs, recruitment process (recruitment factors) and teachers' task performance in public secondary schools in Oyo State.

Table 3: Correlation matrix on relationship among personnel needs, recruitment process (recruitment factors) and teachers' task performance

Variables	Teachers' task performance	Personnel Needs	Recruitment Process
Teachers' Teaching task performance	1.000		
Personnel Needs	.382** (0.003)	1.000	
Recruitment Process	.342** (0.001)	0.325** (0.012)	1.000
Mean	2.7546	2.7134	3.6108
Std.D	.26078	.26081	.39932

The relationship between recruitment factors (personnel needs, recruitment process) and teachers' task performance was shown in Table 3. The result showed that there was a significant relationship between personnel needs and teachers' task performance in secondary schools ($r = 0.38$, $P < 0.05$). Also, there was a significant relationship between recruitment process and teachers' task performance ($r = 0.34$, $P < 0.05$). The implication is that there was significant relationship among personnel needs, recruitment process and teachers' task performance in public secondary schools. The magnitude of relationship is moderate and positive. This implies that an increase in application of personnel needs and recruitment process (recruitment factors) in recruiting teachers would bring a moderate positive improvement in teachers' task performance in public secondary schools. The null hypothesis is hereby rejected.

The result of this study supports the findings of Osemeke (2012) who found out that there is a positive association between good recruitment factors and workers task performance. Oyedele (2021), Salifu (2019), and Dineen and Williamson (2012) affirmed that there is a positive relationship among personnel needs, recruitment process (recruitment factors) and teachers' task performance in secondary schools. From the study conducted by Syed and Jama (2012) the study found out that adequately utilization of recruitment process is positively related to teachers' task performance. According to Huselid (2020) if the recruitment process is observed that gives an outsized collection of competent candidates, paired with a reliable and valid choice regime that may have a considerable influence over the standard and sort of skills new workers possess. Similarly, Rauf (2007) discovered that

sophisticated recruitment procedures are positively related to task performance in organizations.

On the contrary, the result is not in line with the findings of Andrews (2020) and Bowen (2003) positions that there is no significant relationship between personnel needs (age, gender) and the job performance of teachers. Yearta (2019) showed no effect of personnel needs on work performance. Meanwhile, Smedley and Whitten (2006) recommended personnel needs as a probable factor for work performance. Shultz and Adam (2007) identified no significant relationship between recruitment process and work performance of teachers. Kujala, Remes, Ek, Tammelin and Laitinen (2005) was not pleased with the task performance of staff of public secondary schools but the study by Birren and Shay (2001) opposed this result as they found their performance hanging on the recruitment factors (personnel need and recruitment process) of the school system.

Conclusion

Based on the data collected, analyzed and the findings from the study, the following conclusions were made.

The level of teaching task performance of teachers in public secondary schools was high in public secondary schools. The study also concluded that in general, while recruitment factors are rarely practised in public secondary schools, however, recruitment based on personnel needs was sometimes practiced in recruiting teachers but recruitment process is rarely adherent to in recruiting teachers in Oyo State. Also, there is a positive significant contribution of recruitment factors, organizational culture and work environment to teachers' task performance in public secondary schools in Oyo State. This is an indication that recruitment factors, organizational culture and work environment are responsible for teachers' task performance in Oyo State.

Recommendations

Based on the findings from the study, the following were recommended:

- i. The level of teachers' teaching task performance should be improved especially the aspect of administrative task performance of teachers which was low so as to achieve high level of teachers' task performance in public secondary schools in Oyo State.

- ii. Recruitment factors are encouraged to be practiced always in public secondary schools, especially the recruitment process that is rarely practiced in recruiting teachers. To have quality and professional teachers in the teaching profession, the recruitment process should be followed and practiced always.
- iii. Steps should be put in place by educational stakeholders to ensure that recruitment factors are always practiced in recruiting teachers for task performance of teachers to be improved in public secondary schools in Oyo State.
- iv. Recruitment factor (personnel need) that is sometimes used for recruiting teachers are encouraged to be used always for better teachers' task performance in public secondary schools

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“WHEN EMOTIONS MEET SCHOOL CHALLENGES”- AN INTERDISCIPLINARY EMOTIONAL EDUCATION MODEL FOR PRIMARY SCHOOL

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Abstract: *In primary education, children can sometimes experience intense emotions and may not yet have stable language to describe how they feel. Sometimes, children may also mention common body discomforts during the school day (for example: abdominal discomfort, headache or malaise). In this context, the school can use simple emotional education approaches that provide accessible language to children and predictable routines for everyday situations. The article presents “When Emotions Meet School Challenges” as a hypothetical educational model, based on the school environment, for primary education. The model describes the cooperation between a school nurse and an emotional education facilitator, using consistent, non-evaluative, classroom-specific language. The model refers to the narrative universe “Dog Legends” as a narrative resource that provides a common, child-friendly vocabulary for classroom discussions about emotions and common bodily cues. The materials described include an animated story, a short adult-guided group routine, and an educational song. Together, these forms repeat single steps of „break/pause” (observe-breathe-request help) in an age-appropriate format. The article presents the theoretical foundations of the model, the structure of the described materials and the roles of the school adults presented in the narrative framework. The article does not report implementation of data or measured results and does not describe clinical evaluation, diagnosis or treatment.*

Keywords: *emotional education; primary education; whole-school approach; narrative-based learning; language and classroom routines.*

Authors Note

The qualifications mentioned are provided for identification purposes only and do not indicate that clinical services are offered in this article. The model described in this article is hypothetical and conceptual and does not include implementation data or measured results.

Introduction

Some studies estimate that a proportion of children and adolescents report functional somatic symptoms (FSS), such as abdominal pain or headache, in the absence of an identifiable organic explanation (Jungmann et al., 2022). Literature notes that these experiences may be associated, for some children, with difficulties in daily functioning and school attendance (Jungmann et al., 2022). Other research also discusses the links between children's socio-emotional skills and later indicators of well-being (Greenberg et al., 2017).

In childhood, literature describes that intense emotions and yet limited emotional language can sometimes be accompanied by bodily experiences (Jungmann et al., 2022). For example, alexithymia, the difficulty of identifying and describing one's own emotions, has been reported to be positively associated with higher levels of some physical complaints in certain samples (Jungmann et al., 2022). In addition, the signal filtering model describes that body signals that are usually filtered can more easily reach awareness in contexts of chronic distress or increased activation (Rief & Barsky, 2005).

Middle childhood is frequently discussed as an important period for learning emotional awareness and age-appropriate regulation skills (Taylor et al., 2017). Meta-analytical work on universal Social and Emotional Learning (SEL) programs reports follow-up effects for some results when such programs are delivered in childhood (Taylor et al., 2017). Related literature discusses "raising awareness" as a possible process in which repeated attention to physical signals and uncertainty about their significance can contribute to time-enhanced perceptions (Rief & Barsky, 2005).

Schools are frequently discussed in literature as a practical framework for universal educational approaches, given the time spent by children there and the existence of common social and academic demands (Greenberg et al., 2017; Taylor et al., 2017). Some authors also note challenges related to coordination between school adults who support children in different roles (Greenberg et al., 2017). In this context, the

literature describes the value of using consistent language and coordinated approaches between adults in the school environment (Greenberg et al., 2017).

The above background is provided as context. This article presents a hypothetical educational model, based on the school environment, for primary education, which describes a coordinated approach to using simple language about emotions and about common bodily cues.

The purpose of the article is to describe how early emotional education can be used in school life and to present school as a learning environment where children can practice naming emotions and asking for help without labeling or evaluation.

Objectives and reasoning

In primary education, children may sometimes experience discomfort through ordinary bodily sensations or behavior and may not yet have stable language to describe how they feel. In this context, the proposed model provides a consistent, class-friendly approach based on cooperation between school nurse, teacher, child's family, and an emotional education facilitator.

The model provides a common language and simple routines that can be used in everyday school situations.

General Objectives

- Introducing simple and consistent language for common emotions and body cues in primary education;
- Supporting cooperation between adults in school so that children hear the same calm message in different contexts;
- Providing practical, class-appropriate routines for everyday moments;
- Transmission of information to parents and school management about the educational approach to the model and its use in the classroom.

Specific Objectives

- Providing a set of age-appropriate educational activities using storytelling, symbolic play, short breathing routines, gentle movement breaks and guided discussions;
- Supporting the practice of naming emotions and simple steps of "break/pause" through group activities, storytelling, and a short educational song;
- Offering basic information sessions for adults so that similar language can be used at school and at home when it is appropriate;

- Describing simple coordination steps between the school nurse and the emotional education facilitator when a child repeatedly asks for help during the school day.

Literature Review

Note: The concepts and terms described below are presented as a general background, based on published literature. The model described in this article is hypothetical and conceptual; the use of clinical terminology in this section does not imply statements of diagnosis, treatment or efficacy for the model described later.

The Relationship Between Emotions and Somatic Manifestations in Children

In literature, a frequent starting point is the distinction between medical symptoms with organic etiology and functional somatic symptoms (FSS), described as bodily manifestations without sufficient organic explanation and discussed as occurring in childhood and adolescence. FSS may include abdominal pain, headache, dizziness, nausea, fatigue, or other complaints that may interfere with school and psychosocial functioning. Studies discuss that such complaints are reported at these ages and may be influenced by stress, emotion-related processes, and parental factors (Jungmann et al., 2022).

Somatization is described in literature as a way in which affective suffering can be expressed in body language: complaints (pain, discomfort, or other autonomic bodily reactions associated with emotional stress) for which an organic cause is not confirmed by clinical examination and in which emotional factors may be involved. According to Zawilski (2022), a summary list of common bodily manifestations associated with negative emotions, include abdominal pain and headache, palpitations, fatigue, shortness of breath, “lump in throat”, numbness, and diarrhea.

In the kindergarten years and the beginning of primary school, literature discusses that children may have limited linguistic and metacognitive resources for consistent self-observation and verbalization of internal experiences. This may complicate the recognition of possible emotional contributors and may be associated with repeated presentations to school health services (Zawilski, 2022).

Research reports associations between FSS and variables related to emotional regulation in children. For example, FSS have been reported to be negatively associated with adaptive strategies such as acceptance and positive with strategies such as rumination and alexithymia (difficulties in identifying and describing emotions) (Jungmann et al., 2022).

Parental factors are also discussed in the literature. For example, parental somatization and debilitating reactions to a child's emotions have been reported to be correlated with higher levels of somatic complaints and negative affect in children (Jellesma, 2016). These findings are discussed as supporting a relational and contextual perspective on somatization, rather than an exclusively individual one. Some preliminary interventional studies suggest that approaches involving the child's supportive environment, including parents, may be associated with changes in the intensity of symptoms, child functioning, and parental stress indicators (Etkin et al., 2024). Other papers discuss the fact that anxiety at young ages can be under-recognized and sometimes expressed through bodily complaints, and describe school environment as one of the places where early recognition and support can be discussed (Zawilski, 2022).

Emotional Education in the School Environment

Emotional education is described in many frameworks as relevant to child development, and school is frequently discussed as a context for learning socio-emotional skills. Within this frame, emotional literacy - identifying, naming, and discussing emotions - is described as a basic component of socio-emotional learning.

The SEL paradigm describes five central areas: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (CASEL, n.d). Meta-analytical evidence reports positive average effects of SEL programs on socio-emotional skills, prosocial behaviors, and academic results in studies included (Durlak et al., 2011).

European educational policy documents discuss the school's role in prevention and mental health promotion and describe universal approaches supported by the wider school environment, including whole school/systemic perspectives (European Commission, 2021).

Bio-Psycho-Social Approach

The bio-psycho-social model is described as a framework for understanding health as an interaction between biological, psychological, and social processes (Engel, 1977). In the literature on FSS, this perspective is often mentioned because physical complaints can be reported in the absence of a clear organic etiology and are discussed in relation to processes related to emotions and relational context (Jungmann et al., 2022).

Narrative and Symbol as Educational Tools

For children from preschool to primary, many authors discuss the usefulness of languages suitable for development, including playful

and symbolic formats. Storytelling and symbolic characters are described as ways that can support the expression and discussion of internal experiences.

Studies on shared reading report associations with socio-emotional skills, including empathy, emotional vocabulary, and understanding of social situations, (Schapira & Grazzani, 2025). In addition, some syntheses discuss creative bibliotherapy and non-therapeutic games as approaches associated with changes in results related to emotions (Veraksa et al., 20225; Redman et al., 2024).

Neuroscience-oriented literature discusses music as relevant to emotional processes and cognitive functioning, describing effects on psychological state, attention, and brain activity. Research reports that listening to and producing music activates multiple cortical areas related to emotion, memory, motor activity, and regulation-related processes and discusses links with neuroplasticity and well-being indicators (Demarin et al., 2016).

Methodology

This article presents a hypothetical educational framework for the primary education environment. It is conceptual and literature aware and does not test a clinical hypothesis and does not report implementation data; instead, it describes an educational model based on literature on emotional education, FSS, SEL, bio-psycho-social perspective, whole-school approaches, and narrative and play-based learning.

„When Emotions Meet School Challenges“ Model Description

“When Emotion Meet School Challenges“ is an integrated approach to emotional education for primary school, designed to help children explore the relationship between emotions and common bodily responses. It is presented as a model described for possible application in the school environment and is based on the collaboration between school nurse and emotional education facilitator, with an emphasis on emotional vocabulary, normalization of emotions and the practice of simple routines of soothing and refocusing, rather than on clinical evaluation or diagnosis.

The program can be delivered in a modular format (usually 4-8 weeks, one session per week, 45-50 minutes), using age-appropriate activities such as story-based play, short breathing routines in class. A distinctive feature of the model is the use of the narrative universe “Dog Legends“ as a child-friendly symbolic resource that supports a common language to talk about emotions and observe ordinary bodily cues in an accessible and attractive way.

Model's Objectives

The model is designed to support basic emotional learning in primary education through an age-appropriate educational approach centered on experience, story, and relationship. It is built around the narrative universe, "Dog Legends", which provides children with a common, friendly language to discuss emotions and observe common bodily cues.

The model uses three coordinated elements, presented consistently:

1. An animated story (a cartoon) with the characters "Dog Legends" and two familiar adults in the school, presenting an ordinary school situation (for example - a test), emotions that may arise and typical body reactions - along with simple, age-appropriate steps that children can try in class.
2. A short educational song, inspired by the story, used as a constant routine in class and as a reminder of the simple steps of "break/pause" (observe-breathe-ask for help).
3. A short, adult-guided group activity that includes gentle body observation, slow breathing, simple movement, and a brief recapitulation of the main message in everyday language.

Together, these elements repeat the same educational message in story, song, and activity, helping children practice speaking about emotions and bodily cues in a supportive classroom setting without evaluation or diagnosis.

Recognition and Naming of Emotions

The first goal is to help children observe and name a small set of basic emotions (e.g., joy, sadness, fear, anger, surprise, contempt, and disgust) and relate them to familiar school moments. Children are invited to practice simple questions such as "What do I feel?" and "What happened?".

In the model, this is supported by an animated story in which children watch the characters "Dog Legends" in everyday school situations (for example a test or a difficult task). With the support of two familiar adults in school, children receive simple, friendly words for emotions.

Learning focus: practicing naming emotions in everyday language (for example: "I think I'm afraid").

Observation of Ordinary Body Cues

The second goal is to help children notice that emotions can sometimes be accompanied by ordinary bodily sensations. Children are invited to

observe simple bodily cues and consider emotions as a possible part of the bigger picture without making assumptions.

In the story, an adult follows the usual school procedure and uses calm, age-appropriate language when a child mentions discomfort. In group work, children are invited to observe simple sensations (for example, stomach, chest or throat) in a short, optional and non-intrusive way.

Learning focus: observing and discussing body indices in plain, non-alarming language.

Practicing Simple Steps of “Break/Pause”

The third goal is to introduce a narrow set of simple, class-appropriate steps that children can try out when they feel overwhelmed. These are presented as daily routines that can be used in schools.

The model includes:

- Slow breathing together;
- Short, gentle pauses of movement (for example stretching, easy shaking of hands /arms);
- Asking for help from an adult, clearly presented in the story.

The song is used as a predictable routine that repeats the same steps in an easy-to-remember form.

Learning focus: practicing a simple sequence like “pause-breathe-ask for help“.

A Predictable and Supportive Classroom Message

The fourth goal is to support a school environment where emotions can be mentioned without labeling and where children know what kind of support is available.

This is supported by:

- Using “Dog Legends” characters as a common story language;
- Repeating simple messages (for example, “sometimes the body reacts when emotions are strong“);
- Presentation of the cooperation between two adults in the story;
- Calm responses to children’s emotions without dramatization.

Learning focus: creating a consistent and gentle way to talk about emotions and ask for support at school.

Target Group

Primary group: primary school children

The model is intended for children between 6 and 10 years old. At this age, children still learn how to:

- Put their emotions into words;

- Observe and describe ordinary bodily cues;
- Use simple routines of “break/pause” with the guidance of an adult especially in agitated moments;

The model is designed for use at class level/ the whole school to:

- Integrate simple language of emotions into school life;
- Provide the same message and routines to all children;
- Avoid separation of children in “special groups” according to need.

Content can be adapted according to age:

- 6–8 years: more game, pictures, short story segments, predictable routines;
- 8–10 years: more extensive guided discussions, extended emotional vocabulary, school scenarios.

Adults involved (support group)

Teachers, parents, and school staff

The model also provides a common set of words and routines that adults can use consistently.

Teachers:

- Use a common, simple language for emotions and bodily cues;
- Introduce short routines (for example: a short break, slow breathing, a pause for movement);
- They respond in a constant way, without labeling, when children show strong emotions;

Parents:

- Receive simple informative guidelines on how emotions can arise in everyday life;
- They use similar language and routines at home if they choose to.

School staff (including auxiliary staff):

- Use the same simple language and consistent responses when children ask for help or mention discomfort;

Common message (model tone):

A unique, consistent message is repeated throughout the model; emotions are common, the body can react, and children can practice simple steps with the support of an adult.

Materials and Resources

The model uses a small set of class-friendly resources, connected to the narrative universe “Dog Legends“. These resources are presented in a simple format, using storytelling, music, and short adult-guided group routines, without any additional handouts or written material. The resources are intended for use in primary education classes and regular support spaces in the school.

Dog Legends (animated educational story)

A central element of the model is a short, age-appropriate animated story in which the “Dog Legends“ characters (Rey, Ryo, Shiba, and Algo) appear as students in a school setting.

The story follows a familiar school moment (for example a difficult test) and shows that children may notice emotions and bodily cues at some moments (for example “a sensation in the tummy“, a lump in the throat or restlessness).

In the story, two adults within school have clear and complementary roles:

- The school nurse provides simple, calm explanations, and a basic reminder;
- The emotional education facilitator provides simple words for emotions and models short “break/pause” steps that children can try out at school.

The story repeats a simple message: sometimes strong emotions can be accompanied by bodily cues, and children can take a break, breathe, and ask for help from an adult.

Educational use: the story provides a common example that can support class discussion about emotions, body cues, and asking for help.

„When Emotions Face a Test“ Song (class routine)

The model includes a short, story-inspired song that repeats the same message in a predictable and child-friendly format. The song follows a simple rhythm and includes a short sequence of steps to “pause” (observe-breathe-ask for help).

The song can be used:

- As a short routine at the beginning or end of a lesson;
- As a predictable transition during the day;
- As a simple reminder of the main message.

Educational use: the song supports repeating the same steps in a familiar format.

Group Routine “When the Body Speaks, We Listen”

The model also includes a short, adult-guided group routine that brings together story, song, and simple class steps. It is carried out with the entire group and does not require children to share personal information.

The routine includes three parts:

- Observation of the body: children are invited to observe simple sensations (for example, abdomen, chest, neck) in an optional, non-intrusive way;
- Steps of the “pause”: slow breathing together and a short, gentle pause in movement (for example, stretching or gently shaking arms/hands);
- Recapitulation of the message: a brief recapitulation in a common language (for example: “Emotions are common. The body can react. We can take a break and ask for help”).

The routine does not involve individual exposure and does not require auxiliary materials.

Educational use: routine provides consistent and repeatable class practice for observing emotions and body cues and using simple steps for “pause”.

Conflict of Interest

The authors state that there are no institutional conflicts of interest related to the preparation of this manuscript.

One of the authors is the creator of the narrative universe, “Dog Legends” referred to in this article. “Dog Legends” materials have been commercially distributed in the past through third-party self-publishing and distribution platforms.

This manuscript is not a marketing communication and does not contain sales link, prices, testimonials, recommendations or statements regarding results.

The model described in this article is hypothetical and is presented as a conceptual educational model. It was not implemented as a study in the school and no child data was collected for this manuscript. The article does not report experimental results and does not claim clinical efficacy.

No results are guaranteed and no specific results are promised from using the hypothetical model or any stories/materials “Dog Legends”.

If the model were implemented in the future, it would be intended as a school-based educational approach and would not involve medical or

psychological diagnosis, treatment or psychotherapy. It would not replace clinical evaluation when necessary.

It is not intended to obtain any commercial benefit, royalties, licensing fees or other compensation from the use of the hypothetical model in schools. Narrative materials are referred to as educational resources and are not intended to direct children, families or schools to commercial platforms.

The authors did not receive external funding, sponsorship or support in any kind for the development of this manuscript.

The opinions expressed belong to the authors and do not necessarily represent the opinions of their institutions.

Qualifications, where mentioned, are provided for identification only and do not indicate that clinical services are offered in this article.

“Dog Legends” Universe as Educational Reference

In this article, the “Dog Legends” narrative universe is referred to as a narrative resource that can be used in primary school in emotional education. In this approach, the story is presented as a common classroom setting to talk about emotions and to observe ordinary bodily cues in age-appropriate language. The story is described as a symbolic learning space in which children can observe characters, practice naming emotions, and link emotions to ordinary body experiences in a calm, unlabelled way (Motorca, 2025).

A defining element described in the narrative analysis is the orientation towards accompaniment, not correction: the child is positioned as an active participant in learning, not as a passive receiver of the rules (Motorca, 2025). In this sense, the characters are described as recurring landmarks, and the story is presented as a structured way of reflecting on everyday school situations and choices (Motorca, 2025).

In educational use, the “Dog Legends” universe is described as being accompanied by simple multimodal elements (e.g., story, song, and short adult-guided group routines). These elements are presented as compatible with common learning formats in primary education that use images, repetition, play, and short routines (Motorca, 2025). In the model description, these materials are framed as common language that school adults can use consistently (for example, in the coordination between school nurse and emotional education facilitator).

The broader literature on FSS discusses associations between children’s body complaints and emotion-related processes, including difficulties in identifying and describing emotions (Jungmann et al., 2022). In this context, focus on an educational, school-based approach, words for simple emotions that can occur in the classroom, and routines is presented as a relevant educational direction for discussing

awareness of the emotion-body link without involving clinical goals or results.

Characters as Landmarks in Classroom

The “Dog Legends” characters are described in narrative analysis as stable figures with symbolic identities that can reflect common themes (e.g., fear of error, the need for protection, shame, the desire to do good, the desire to be seen) in an indirect, story-based way (Motorca, 2025). In the model description, the characters are only used as landmarks for class discussions about emotions, body cues, and simple routines of “pause/break”.

Rey - Calm and Gentle Presence

Rey is described as a calm and gentle character (Motorca, 2025). Within the model, Rey can be used as a reminder of simple steps: pause-breathe-ask for help.

Ryo - Structure and Limits

Ryo is described as a character associated with structure and fairness (Motorca, 2025). Within the model, Ryo can be used as a benchmark for predictable steps and simple language about limits (for example: “Where do I go?”, “Who can I ask for help?”, “What can I do first?”).

Shiba - Movement and Stabilization

Shiba is described as a character connected with vulnerability and perseverance (Motorca, 2025). Within the model, Shiba can be used as a benchmark for short, gentle breaks of movement as a part of a “pause” routine that can be used in the classroom.

Algo - Kindness and “Small” Emotions

Algo is described as a character associated with kindness and a bright tone (Motorca, 2025). Within the model, Algo can be used as a benchmark for everyday language that allows children to mention “small” emotions that they may be hesitant to mention.

The Classroom Dialogue Framework

In this approach, the characters function as the “third point” in conversation. Between children and adults in school (e.g. the nurse, teacher, or emotional education facilitator), the story provides a neutral reference that can make the conversation less personal and less evaluative. In the model’s description, the story, the song, and the short routines are presented as a consistent format for classroom dialogue, including simple transitions from “It hurts my tummy” to “I think I’m afraid”, using common language and a predictable adult response.

Roles of the Adults Involved

1. The role of the School Nurse

In this model, the role of the school nurse is limited to routine school health support and age-appropriate explanations; it does not involve psychological evaluation or treatment, and medical concerns follow existing school procedures. This role does not replace medical evaluation when the child's condition requires it.

In the model, the school nurse is described as an adult who responds calmly when a child mentions physical discomfort during the school day. The role includes basic support and clear, age-appropriate explanations.

Main elements of the role include:

- Observation of common physical discomforts that children may mention at school (e.g. abdominal discomfort, headache, fatigue);
- Noting the times when such discomfort is mentioned (for example, around demanding moments in class);
- Offering a short break/pause (for example, a quiet moment, short rest, water when appropriate, or a simple routine of returning to class) without dramatization;
- Using simple language to note that bodily sensations can have different causes and that sometimes-strong emotions and cluttered moments can be accompanied by bodily cues;

In the animated story, the nurse is presented as a calm adult who uses simple explanations and reminds the child that they can ask for help at school.

2. The Role of the Emotional Education Facilitator

Within the model, the emotional education facilitator is described as an adult who supports children to find simple words for emotions and practice short steps of "break/pause" in the classroom. This role is presented as educational and does not include evaluation or diagnosis.

Main elements of the role include:

- Giving simple, friendly words for emotions (for example "I think I'm afraid", "I am angry", "I am worried") without labelling children;
- Facilitate short, class-appropriate routines that can be used with a group (for example: slow breathing together, a short break in movement, and a reminder to seek help from an adult);
- Sharing basic information with teachers and parents about the language and routines of the model so that adults can use similar words when appropriate;

In the animated story, this adult is presented as a facilitator who uses calm language and simple steps that children can try at school.

3. Coordination Between the Adults in the School

In the description of the model, the school nurse and the emotional education facilitator are presented as using consistent language and simple coordination in common school situations. This coordination is described as:

- Using the same basic message in the story and routines (emotions are common; the body can react; children can take a break and ask for assistance);
- Keeping the child's experience in a common language, not labels;
- Simple communication between adults when the child asks for repeated assistance during a school day, so the child can receive a consistent answer.

In this framework, school is described as a place where children can use a common language to discuss emotions and body cues, and can reach out to familiar adults for support during the day.

Discussion and Limits of the Model

"When Emotions Meet School Challenges" model is presented in this article as a hypothetical educational model based on the school environment. It is described as a class-centered approach that provides simple language and routines to talk about emotions and observe common bodily cues in common school situations.

A distinctive element of the model is the use of storytelling, music, and short adult-guided group routines as the main format of classroom learning. These elements are presented as an age-appropriate way to introduce a common vocabulary and predictable routine without individual evaluation.

Limits

This article does not report implementation data or measured results. The model described here is not intended to provide medical or psychological diagnosis, treatment or psychotherapy, and does not replace clinical evaluation when necessary. If elements of the model were to be used in the future in a school setting, it would require clear role limits and alignment with existing school procedures when concerns go beyond regular classroom support.

Practical use may vary depending on the time availability, personal and local resources, and consistency with which adults use the same language and routines.

Future directions

Future work may include adapting the model to different age groups and school context, and clarifying implementation steps for school staff. If research evaluation is to be pursued in the future, it should be designed and reported separately, with appropriate permission and safeguards.

Conclusions

“When Emotions Meet School Challenges” model is presented in this article as a hypothetical educational model based on the school environment. It describes a classroom-centered way of introducing simple language for ordinary emotions and bodily cues, along with short, repeatable “pause” routines that can be used during common school moments.

In this framing, children are invited to observe and name emotions, observe body cues in a calm way, and use simple steps such as pause, slow breathing, and asking for help from an adult. The model description does not report implementation data or measured outcomes and does not claim clinical effects.

The “Dog Legends” story world is referred to as a narrative resource that can be used to provide a common and friendly vocabulary for classroom discussion. Storytelling and music are presented as group learning formats based on repetition and familiar routines without individual assessment.

Finally, the model describes the coordination between school nurse and emotional education facilitator as a way to maintain consistent language and consistent routines within the school setting.

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LEADERSHIP STYLES, SCHOOL CLIMATE AND MANAGEMENT OF VIOLENCE IN SECONDARY SCHOOLS

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Abstract: *This paper discussed that school climate can be predicted by their leadership styles (transformational, transactional, democratic and authoritarian) and that school climate in turn can influence the management of violence in secondary schools. Descriptive research design was taken. A total of 860 teachers of the secondary school were used as population and the sample was obtained with the help of multi-stage sampling procedure (291 respondents). Questionnaire was used to collect data and the data was analyzed with the help of mean, standard deviation, Pearson product-moment correlation, and regression analysis. The findings indicated that all leadership styles had significant positive correlation with school climate and also between leadership and violence management. The management of violence was also greatly predicted by school climate ($p < 0.05$); and mediation analysis ensured that the leadership had an influence on safety both directly and indirectly due to the climate it produces. Transformational and authoritarian leadership (Beta = 0.362, $p < 0.001$) and (Beta = 0.786, $p < 0.001$) were found to be the most powerful predictors of school climate. The results suggest that leadership behavior and school climate ($r = 0.967$, $p < 0.001$) are the focal concerns in the establishment of safe and well-organized learning environments. It was argued that management of violence is reliant on the quality of leadership practices and climate that is developed in the school. The research suggests that sustained leadership education, enhanced school climate interventions and context-specific leadership strategies would enhance safety and behavior management in schools.*

Keywords: *leadership styles; school climate; violence management; authoritarian; transactional.*

Introduction

The issue of violence in the learning environment is becoming an increasing concern among schools in most quarters of the world. According to reports provided by international organizations like UNESCO (2023), millions of learners continue to experience bullying, physical aggression, and other negative behaviors that disrupt the learning process. This is particularly evident in the areas where social pressure, lack of available resources and overcrowded classrooms already put stress on the school system. The matter has ceased to be considered as a closed disciplinary case but a grave danger to the safety and development of students. The realization of educational objectives demands a school atmosphere that is as well as being academically challenging should be secure, well-organized as well as conducive to education. Lack of safety and discipline means that the goals of secondary education will be compromised because violence, fear, and instability do not allow teaching and learning, kill student motivation, and hinder social development (UNESCO, 2022; Akpan and Odu, 2021). Thus, school safety becomes a condition of the effectiveness of education; schools with elevated levels of violence, gangs, bullying, vandalism, cult, and violence tend to have low academic performance, psychological stress of students, burnout among teachers, and a lack of trust towards the school among residents (Nwankwo & Nwogbo, 2022; Oboegbulem & Alfa, 2020). The given situation preconditions the necessity to study the ways school leaders lead their institutions and the ways their practices impact the methods of preventing and controlling violence.

The behavioral approach of a school head in influencing and directing the staff and students is referred to as the leadership style, which greatly determines the school climate, disciplinary system, conflict resolution pattern, and the general school culture of safety (Northouse, 2021; Leithwood, Harris & Hopkins, 2020). Democratic leadership fosters common decision-making and communication, respect and inclusive problem-solving, all of which minimize conflict tendencies and increase collaborative violence prevention efforts (Bush and Glover, 2016; Adeyemi, 2013). On the contrary, autocratic leadership implies strict management and adherence, even though it can suppress misconduct in the short term, extreme rigidity may cause resentment, resistance to students, and secret aggression (Arop, Eyo & Ayuk, 2018). On the contrary, laissez-faire leadership style is usually linked to insufficient supervision, poor discipline, and follow-up, which permits the uncontrolled behaviors of indiscipline, bullying, and violence (Oboegbulem & Alfa, 2020).

The type of leadership has been found a decisive factor in the school discipline and safety results (Leithwood, Harris and Hopkins, 2020). Cases of student fights, bullying, disruption of classes, vandalism in classes, drug related behavior, physical attacks on teachers, and cult like behaviors have been reported in some of the public secondary schools particularly in the study area. They negatively affect the way the school should operate, the way the learning processes should occur, and they cause the psychological tension between learners and staff. The anecdotal sources and school disciplinary data in the metropolis point to the increasing concern about the student aggression, truancy, disrespect to the authority, and lack of following school rules and regulations. Such questions indicate a break in the school discipline system and the need to have effective leadership measures. Violence management refers to the systematized activities of prevention, response and mitigation of destructive behavior in students. Such interventions can be in the form of explicit rules and counselling provisions, supervision, and conflict management protocols. By laying down such thoughts, the relationship between leadership and violence control can be explained and the nature of the leader can be used to promote safety in the school.

Several studies have been conducted concerning these topics, but usually in limited perspectives. Adebayo (2019) also noted that authoritarian behavior by principals, which is strict, may lead to tension among students. Nguyen (2020) described how transformational leadership fostered the good relationships at the school level. Mensah and Boateng (2021) associated democratic leadership with the enhanced collaboration in discipline issues. Okeke (2018) discovered that bullying was mitigated through effective communication by the school heads. According to Hernandez et. al. (2022), supportive leadership led to enhanced capacity of educators to implement rules. According to Fatoba (2021), poor leadership was a factor in disorder in secondary schools. Kariuki (2020) and Bello (2022) both have emphasized the role of leadership in terms of school safety, and Sarpong (2021) spoke about leadership and culture of discipline in general. Although leadership has been identified as a predictor of school discipline and school safety, very little empirical evidence has been reported on the association between certain types of leadership and the management of violence in Nigerian secondary schools. The majority of literature is mainly focused on the effects of leadership on academic achievement, teacher retention and motivation, or school administration (Adeyemi, 2013; Nduhura, 2023), and fewer studies are dedicated to the effects of leadership behavior on the violence prevention systems, restorative practices, safety culture, and

student discipline plans. This dissonance is great considering the rising cases of indiscipline and violence particularly in schools in Nigeria, whereby there is need to employ evidence-based leadership styles that can maintain safe and peaceful learning that is devoid of violence (Akpan & Odu, 2021; Oboegbulem & Alfa, 2020). This gap reveals that there is still more to learn regarding the role of the various types of leadership in the entire set of violence management activities in schools. Scholarly thought that develops focuses on the idea that proper violence management demands proactive leadership to promote positive school culture, open communication, student engagement, and mutual conflict resolution solutions (Katsuno, 2021; Robinson, 2019). The efficient school leaders do not simply make rules but also offer guidance, led by example, developing trust, and encouraging shared accountability in the safety matter. Hence, the connection between leadership styles and violence management is important to be understood in order to inform the school leadership development, behavioral interventions design, and enhance the safe-school policies. The results of this study will help enhance the best leadership strategies, safety policies, and offer some understanding to the educational administrators and policymakers who have resolved to create balanced, safe, and violence-free school systems.

This research project will focus on investigating the relationship between leadership styles and management of violence in schools and school climate. It is based on behavioral theories of leadership and on the research concerning school climate, which describes the effects of everyday practice on the behavior of students. The paper will examine the relationship between transformational, transactional and democratic leadership and effectiveness of violence prevention and response in schools as portrayed in Figure 1.

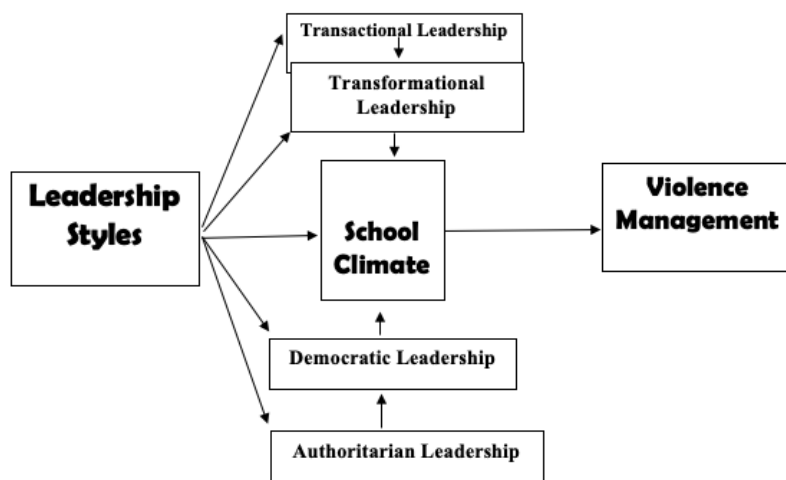


Figure 1: Conceptual Framework on Leadership Styles, School Climate and Violence Management
Source: The Researcher (2025)

Leadership Styles (Transactional, transformational, democratic and authoritarian)

The core of the ideas in this study is the fact that leadership is the act of directing and guiding expectations as well as the formation of the condition under which learning occurs. The concept of leadership style offers the means to state the uniformity of how a school leader collaborates with teachers and pupils. These trends affect the process of communication, decision making, and enforcement of rules. The study can explore the influence of leadership style on the overall school climate, as well as the strategy of curbing the adverse behavior, by considering the style as a definite phenomenon (Lewin, Lippitt & White, 1939). Democratic leadership encourages participation, mutual decision making, respect, communication and open dialogue. Research links that, under the circumstances of democratic actions of principals, students and educators become more involved, discipline is internalized, and violence is reduced (Bush & Glover, 2016; Leithwood et al., 2020). In schools that are organized into a collaboration style, trust and collective responsibility in safety is frequently developed. On the autocratic leadership, control is rule-driven and control oriented. On the one hand, it can provide a temporary effect of conformity, but excessive strictness and depriving students of their voices can lead to resentment, insurrection, or hidden violence (Arop, Eyo, & Ayuk, 2018). Nevertheless, in other situations, a high level of authority can help in a case of an emergency safety, particularly where students are extremely deviant.

School Climate

The school climate theory is containing a significant connection to violence management. Cohen and colleagues defined school climate as the overall mood of the school and expressed that it determines how students behave and how teachers practice (Cohen et al., 2009). This concept can be used to understand why democratic leadership was identified to foster collaboration (Mensah & Boateng, 2021) and why poor leadership was related to disciplinary issues (Fatoba, 2021). Fairness, trust and consistent expectations result in a positive climate whose actions are influenced by school leaders (Hoy & Miskel, 2013).

Violence Management

The third concept in this study is violence management. It is defined as the systematized activities employed to curb conflict, the harmful activities as well as being supportive to the students who might be threatened. These involve oversight, expectancy, early intervention, counselling, and systematic reaction to incidents (UNESCO, 2023). Such measures are used by schools to keep learners safe and secure. The concept of violence management as a system allows considering the many ways that leadership decisions can affect its efficiency and the ways that the daily activity of teachers can affect student behavior. This research is guided by a number of theoretical concepts that can be used to understand the correlation between leadership and safety. Among the earliest influences, there is the work of Lewin, Lippitt and White, descriptions of authoritarian, democratic, and laissez faire styles of leadership disclosed the ways in which the leaders can influence the behavior of a group (Lewin et al., 1939). This was developed later by writers. Transformational leadership that is based on motivation, shared vision, and support was introduced by Burns (1978). Bass (1985), also elaborated on this thought and compared it to transactional leadership that emphasizes on order, tasks, and rewards.

These theories assist in explaining why institutions are being encouraged by some leaders and external discipline is stronger in others. The study is also informed by the school climate theory. It describes the overall color of the school influences the behavior of students and also determines the way in which teachers deal with discipline. Positive climate is related to fairness, trust and expectancy consistency whereas negative climate is closely associated with conflict and chaos (Cohen et al., 2009). Because school leaders control routines, interactions, and values, they build the climate that strengthens or hinders violence management practices (Hoy & Miskel, 2013). One last theoretical concept is school organization in systems view. This point of view considers the school as an integrated system where the leadership, the teaching, the behavior and the administrative policy influence each other (Senge, 1990). Considered in this perspective, violence management is not only a disciplinary instrument, but also a by-product of a broader organizational mechanism. Teacher behavior is an aspect of leadership decisions, which affects students. This description can be used to explain why substantial changes in safety, in many cases, need to focus on both the type of leadership and the processes that underlie the reaction to maleficent behavior. These theories and ideas will give a strong foundation to the research. They turn the study into the direction of understanding the influence of leadership on school behavior and the

ways violence can be resolved with the help of constant directions, clear routines, and prudent administration.

Purpose of the Study

The purpose of this study is to:

1. Test the relations of leadership styles and school climate at secondary schools.
2. Establish the role played by the school climate in violence management.
3. Determine the correlation between the styles of leadership and violence management.
4. Determine the most appropriate leadership style that is most likely to predict the management of violence.
5. Narrow down on the fact whether school climate mediates the relationship between leadership style and violence management.

Research Questions

The following research questions are raised to guide the study:

1. What is the relationship between leadership styles and school climate in high schools?
2. How school climate affects violence management?
3. How is there a relationship between violence management and leadership styles?
4. What is the strongest leadership style that is related to positive school climate?
5. Are the mediators between leadership styles and violence management: school climate?

Research Hypotheses

The following hypotheses are raised to guide the study at 0.05 level of significance:

H0₁: Leadership styles are not significantly related to school climate.

H0₂: School climate and violence management are not correlated significantly.

H0₃: Leadership styles and violence management are not significantly related.

H0₄: The leadership styles do not mediate the correlation between the school climate and the violence management.

Methods

Research Design: The research design that will be used in the study is a descriptive survey design that will be supplemented with the aspects of structural analysis. The research design is appropriate as the study focuses on relationships of leadership styles, school climate and violence management as it is in actual schools. The survey method can enable the researcher to get the information of teachers and administrators themselves who are exposed to leadership practices and who are involved in violence-management routines. The design also offers space to statistically analyze relationships between the most important variables.

Population, Sample and Sampling Technique of the Study.

The population of this study was all the teachers in the secondary-schools in Gusau Metropolis, Zamfara State. Records of the Zamfara State Teachers Service Board (2024) show that there were 43 secondary schools in Gusau Metropolis that employed 860 teachers in total. The targeted population of the study was this category of teachers. The result of this research study was a sample size calculated using the table of finding the sample size used in research advisors at the level of confidence which is 95 percent and the margin of error that is 5 percent. The acceptable sample size was 265 based on a population of 860 teachers. Since chances of non-responses might exist, the sample size was increased by another 10 percent (26 teachers) to make a total sample of 291 teachers. The sample was selected on a multi-stage sampling approach. To start with, the secondary schools in Gusau Metropolis were in clusters based on these educational zones in the public secondary schools. Second, schools in each zone were sampled through a sampling method (simple random sampling). Third, individual teachers were sampled using simple random, according to the updated staff lists of teachers retrieved by school records. Such a sampling process made sure that the respondents have been drawn fairly and in a representative manner among all the public secondary schools within the study region.

The findings of this study were premised on the research questions and hypotheses. The research questions were responded to by means of descriptive statistics such as frequency, mean, and standard deviation. The hypotheses were tested using Pearson Product-Moment Correlation and Multiple Regression Analysis at 0.05 level of significance.

Instrumentation

The data collection tool was a questionnaire created by a researcher and named: Leadership Styles and Violence Management Questionnaire (LSVMQ). The questionnaire was forced into four parts: Section A covered leadership styles, which were based on the known descriptions of transformational, transactional, democratic, authoritarian and other related styles. Section B gauged the climate of schools based on items that indicate trust, fairness, communication and general atmosphere. Section C gave attention to the violence management practices, prevention, supervision, reporting, counselling and disciplinary response. There were all elements of Sections A - C that were conceptualized on a 4-point Likert scale: Response Score Strongly Agree (SA) 4 Agree (A) 3 Disagree (D) 2 Strongly Disagree (SD).

Three professionals, Educational Management (with a specialization in supervision) and the other in Measurement and Evaluation and an expert in supervision of a school of the Post-Primary School Management Board were subjected to face and content validation, of the questionnaire. Their remarks resulted in the change of language clarity, content congruence, measurement and alignment, and were relevant to the objectives of the research. The instrument was found valid to be used. Reliability of the instrument was determined by pilot testing of 30 public secondary-school teachers with the Kaura-Namoda LGA which is not within the study area. The analysis of responses was done based on Cronbach's Alpha with the following coefficients obtained: leadership styles (0.85); school climate (0.87); and violence management practices (0.89). The general reliability coefficients was 0.86. The values are more than the acceptable level of reliability of 0.70 in that the instrument was internally consistent and adequate to conduct the study.

Data gathered was taken through descriptive and inferential statistical tests. Mean scores, standard deviations as well as frequency distributions were used as descriptive statistics to summarize and describe the nature of the respondents and the central tendencies of their responses. Inferential statistics was used to test the hypotheses and the relationship between the variables. Precisely, the extent and direction of the relationship between leadership styles, school climate and violence management were ascertained through Pearson Product-Moment Correlation Coefficient (PPMC). Also, it undertook multiple regression analysis to determine the overall effect and predictability capacity of the independent variables on the dependent variable.

Ethical Consideration

There were ethical considerations that were followed during the study. The Zamfara State Teachers Service board and the principals of the sampled government secondary schools were requested to provide permission to conduct the research. The research under discussion was conducted on a strictly voluntary basis, and the respondents were promised that there would be no repercussions should they decide to drop out at any point. All the information was handled with the highest level of secrecy; the respondents were not asked to disclose personal identifiers, and anonymity and confidentiality were highly maintained. Collected data were only employed in academic purposes and kept in a safe place to avoid unauthorized access. Informed consent was obtained and the aim of the study was explained to the participants before administration of the instrument was conducted. The research followed the accepted principles of conducting ethical research in education, and thus, the research did not infringe on the participants in terms of respect, privacy, and protection.

Results

This part shows the research results of the study focusing on the leadership styles, school climate, and violence management in high schools. The results are systematically given under each research question and hypothesis.

Table 1: Descriptive Statistics of Study Variables

Variables		N	Mean	SD
Transformational Leadership (TL)		291	3.12	0.77
Transactional Leadership (TRL)		291	3.08	0.83
Democratic Leadership (DML)		291	3.22	0.72
Authoritarian Leadership (AUTHL)		291	3.07	0.86
School Climate (SCHL_CL)		291	2.94	0.85
Violence Management (VIO_MGN)		291	3.14	0.76

The findings indicate that Democratic Leadership has got the better mean rating ($M = 3.22$, $SD = 0.72$) and Transformational Leadership has got the second-best mean ($M = 3.12$, $SD = 0.77$). Transactional (M

= 3.08, SD = 0.83) and Authoritarian Leadership (M = 3.07, SD = 0.86) were a little low. The climate in schools was the moderately positive (M = 2.94, SD = 0.85), whereas violence management was a bit higher (M = 3.14, SD = 0.76), which shows the generally positive practices in schools.

Research Question 1 & Hypothesis 1.

RQ1: What is the relationship between leadership styles and school climate in high schools?

H0₁: The leadership styles are not significantly related to school climate.

Table 2: Correlation between Leadership Styles and School Climate

Leadership Style	r with School Climate	p-value	Interpretation	
Transformational (TL)	0.955	0.000	Strong correlation	positive
Transactional (TRL)	0.960	0.000	Strong correlation	positive
Democratic (DML)	0.903	0.000	Strong correlation	positive
Authoritarian (AUTHL)	0.967	0.000	Strong correlation	positive

Decision: Reject H₀₁ ($p < 0.05$)

School climate was greatly related to all forms of leadership. There were strong positive relationships between Transformational leadership ($r = 0.955$, $p < 0.001$), Transactional leadership ($r = 0.960$, $p < 0.001$), Democratic leadership ($r = 0.903$, $p < 0.001$), and Authoritarian leadership ($r = 0.967$, $p < 0.001$). The null hypothesis (H₀₁) is consequently rejected and this means that the greater the levels of these leadership styles the more positive the school climate of the sampled schools.

RQ2: How does school climate contribute to managing violence?

H0₂: School climate does not have a significant correlation with violence management.

Table 3: Correlation between School Climate and Violence Management

Variable	R	p-value	Interpretation
School Climate	0.967	0.000	Very strong positive relationship
Decision: Reject H_{02} ($p < 0.05$).			

School climate showed a very strong positive correlation with violence management ($r = 0.967$, $p < 0.001$). The null hypothesis (H_{02}) is rejected, indicating that schools with a positive climate tend to implement more effective violence management practices.

RQ3: How is there a relationship between leadership styles and violence management practices?

H 0 3: Leadership styles do not have a significant relationship with violence management.

Table 4: Correlation between Leadership Styles and Violence Management

Leadership Style	r with Violence Management	p-value	Interpretation
Transformational (TL)	0.990	0.000	Very strong positive correlation
Transactional (TRL)	0.992	0.000	Very strong positive correlation
Democratic (DML)	0.974	0.000	Very strong positive correlation
Authoritarian (AUTHL)	0.988	0.000	Very strong positive correlation

Decision: Reject H_{03} ($p < 0.05$)

There was a very strong positive correlation between all leadership styles and violence management (TL: $r = 0.990$; TRL: $r = 0.992$; DML: $r = 0.974$; AUTHL: $r = 0.988$; all $p < 0.001$). The null hypothesis (H_{03}) is rejected, and this means that the leadership behavior has a significant influence on effectiveness in violence management in schools.

RQ4: What leadership style is the most closely related with positive school climate?

Table 5: Multiple Regression of Leadership Styles Predicting School Climate

Predictor	B	Std. Error	Beta	t	Sig.	Interpretation
TL	0.399	0.092	0.362	4.340	0.000	Significant positive predictor
TRL	0.164	0.128	0.160	1.280	0.202	Not significant
DML	-0.414	0.064	-0.349	-6.481	0.000	Significant negative predictor
AUTHL	0.778	0.106	0.786	7.313	0.000	Strongest positive predictor
Regression Model Summary (R = 0.972, R² = 0.944, Adjusted R² = 0.944)						

School climate is significantly predicted by the regression model ($R^2 = 0.944$, $F(4,286) = 1212.975$, $p < 0.001$), which accounts for 94.4% of its variance. Authoritarian Leadership (Beta = 0.786, $p < 0.001$) and Transformational Leadership (Beta = 0.362, $p < 0.001$) have the strongest positive predictor of each other. The impact of Democratic Leadership is significant, but it is negative (Beta = -0.349, $p < 0.001$), whereas the impact of Transactional Leadership is not significant ($p = 0.202$). This implies that Authoritarian and Transformational style of leadership contributes to school climate most in the sampled schools.

6. Research Question 5 & Hypothesis 4

RQ5: Does the school climate mediate the effect of the leadership styles and violence management?

H04: School climate has no mediation effect on the relationship between leadership styles and management of violence.

Table 6: Mediation Analysis of School Climate between Leadership Styles and Violence Management

Leadership Style	Direct Effect on VIO_MGN (c)	Indirect Effect via SCHL_CL (a×b)	Interpretation
TL	0.28	$0.399 \times 0.967 \approx 0.386$	Partial mediation
TRL	0.10	$0.164 \times 0.967 \approx 0.158$	Partial mediation (small, not significant for c)
DML	0.15	-0.414×0.967	Partial mediation

		≈ -0.400	
AUTHL	0.35	$0.778 \times 0.967 \approx$	Partial mediation
		0.752	

The mediation analysis reveals that school climate partially mediates the spirit of leadership and management of violence. The indirect influence through school climate is significant in all the leadership styles: Transformational Leadership (0.386), Transactional Leadership (0.158), Democratic Leadership (-0.400) and Authoritarian Leadership (0.752). This implies that leadership has an indirect effect in violence management via its effects on school climate. As a result, H 0 4 is rejected ($p < 0.05$), which proves the importance of school climate in mediating the relationship.

Discussion

The researchers investigated how school climate is affected by leadership style, and how school violence can be managed by use of leadership style. The results revealed that each of the leadership styles studied (transformational, transactional, and authoritarian) was positively correlated with the climate in the school. This is also in line with Hallinger (2018) who has made the argument that leadership behavior influences the interpersonal and organizational status within schools, thus serving as a factor that determines the way that teachers and students relate to one another. Likewise, Leithwood, Harris and Hopkins (2020) assert that the next factor that defines the school outcomes is the leadership, which corroborates the results of the current research.

The research also found out that violence management was strongly and significantly related to school climate. The schools that had a clear communication channel, fairness in disciplining and a supportive framework were more effective in conflict regulation and violence reduction. This result supports that Thapa et al. (2018) who discovered that favorable learning conditions promote trust, cooperation, and emotional safety, which all promote better behavior control.

One of the major results of the current research is that the factor of authoritarian leadership became an important predictor of school climate. Although the concept of transformational leadership is admired in educational studies, the outcomes point to the situational applicability of the directive leadership concept. In the schools whose discipline requirements are high, or behavioral problems are frequent, strict leadership might offer the framework which has to be taken into account in order to achieve stability. Lewis, Romi and Roache (2019)

support this observation and discovered that directive style of leadership decreased indiscipline in schools with behavioral issues. Equally, Berkowitz et al. (2017) found that administrative practices were more effective in the school environment where violence is frequent and highly directive.

Besides, there was a strong connection between violence management and the leadership style. This substantiates the arguments of Osher et al. (2018), who discovered that predictable routines and cohesive environments, which are commonly produced by successful leadership, play a great role in eliminating conflict and enhancing student behavior. Smith and Benbenishty (2019) also show that the practice of leadership that encourages the promotion of clarity, consistency, and fairness in school activities result in the reduction of school violence. Hence, both school climate and the leadership style have a combined influence on effective management of violence in schools.

Implications of the Findings.

Empirical Implications

The results of this research can have enormous implications on empirical studies of school leadership and safety. First, the research proves earlier empirical assertions that leadership style is a highly predictive indicator of school climate. The observed relationships go hand in hand with empirical findings by Hallinger (2018) and Leithwood et al. (2020) where leadership was identified to dictate the quality of relationships, expectations, and organizational culture. Second, the close relationship between school climate and violence management contributes to a substantial body of empirical research which indicates that effective school climates minimize student violence and school discipline. The article by Wang and Degol (2016) and that of Thapa et al. (2018) validate the concept of conducive climates that promote collaboration and a decrease in behavioral disturbance, thereby confirming part of the results of the research under consideration. Third, the fact that an authoritarian leadership was the strongest predictor of school climate in the present situation provides valuable empirical data. Ideally, the transformational approach of leadership can be more preferred than any other, but the records indicate that directive leadership can be more effective in the schools where indiscipline is highly prevalent. This once again substantiated the empirical results of Lewis et al. (2019) and Berkowitz et al. (2017) who found that stable, strong leadership increases behavioral control in risky school environments.

Theoretical Implications

The results of this research also have certain significant theoretical implications. To begin with, School Climate Theory is supported by the high impact of leadership style on school climate because leadership determines the behavioral norms, values and expectations in the school environment. This endorses the theoretical assertions of Hallinger (2018) in the regard of the centrality of leadership in organizational operation. Transformational and transactional styles are also effective and this contributes to the Transformational Leadership Theory. The results demonstrate the role of inspiration, motivation, and systematic guidance in the enhancement of school climate and behavioral control and as such serve to inform the theoretical contribution made by Bass. The existence of authoritarian leadership that is more prominent in predicting school climate continues theoretical arguments of directive leadership as well. Though the authoritarian leadership style has had a bad reputation, these results validate the arguments by Lewis et al. (2019) that it may be effective under the condition of strong discipline and order. Lastly, the findings support the Social Control Theory that implies that consistent rules and well-organized environments have a deterring effect on deviant behavior. Findings of the study indicate that Hirschi is correct in arguing that behavior is controlled by established institutional expectations control behavior.

Practical Implications

The findings of the study provide certain practical implications on school leadership and policy. First, the style of leadership is significant to school climate, hence principals and school leaders are supposed to be offered with systematic training on communication, managing conflicts, and implementing the best leadership approaches. This is consistent with the recommendations of Osher et al. (2018) related to the creation of safer school leadership. Second, there is a positive correlation between school climates and the management of violence which implies that schools ought to create positive, just, and predictable environments. Thus, schools should focus on methods of routine, strict rules, and discipline. It once again aligns with the suggestions made by Smith and Benbenishty (2019). Third, authoritarian leadership value in some situations implies that adaptive leadership should be employed by the principals. A combination of the transformational, transactional and directive practices might be required depending on the behavior problems in the school. Lastly, school climate change should be one of the main aspects of interventions aimed at the decrease of school violence. Several punitive

processes are not sufficient, in order to control behavior, the relationships, equity, communication and care structures ought to be enhanced.

Conclusion

This paper discussed the effects of the various leadership styles on the school climate and violence management at school administrative levels. Particularly, it compared transformational, transactional, and authoritarian leadership styles and their relationship with school climate, and the role school climate plays in managing violence. The findings revealed that all the three types of leadership (transformational, transactional, and authoritarian) all significantly positively influenced school climate. Schools, in which leaders had good communication skills, inspired teachers, gave consistent punishment, and offered a well-organized environment, were more likely to have a positive climate. Also, the research established that there was a close relationship between school climate and violence management. The more successful schools that were able to prevent and deal with student misconduct did so by promoting fairness, predictable routines, supportive relationships and open lines of communication. Another significant observation that was made during this research was that authoritarian leadership was the most powerful predictor of school climate. Although transformational leadership has become the center of most studies in the education sector, it was found that firm and directive leadership might be more effective than transformational leadership in schools where discipline was highly demanded. On a final note, this paper has pointed out that the leadership styles and school climate have a combined influence in the management of violence expectations.

Recommendations

On the basis of this research, the following recommendations are offered that:

1. Combining transformational leadership (to inspire and motivate the staff); transactional leadership (to enforce standards); and strict authoritarian leadership (where discipline issues are severe) are all recommended to school administrators.
2. School leaders ought to develop objective, correct and uniform routines that govern student behaviors.
3. Schools are encouraged to establish such mechanisms as suggestion boxes, student forums, counseling units, and open-door policies which would facilitate the development of a trusting relationship and reduce the level of conflict.

4. The teachers ought to be trained on how to handle the classroom, de-escalation strategies, restorative practices, and positive behavioral supports to minimize the conflict in the classroom and supplement the efforts undertaken by the school management; and the principals and the administration should be trained on the areas of leadership styles, conflict management, communication and improvement of school climate.
5. The schools are to cooperate with parents, community organizations, and security agencies more closely to provide assistance with the monitoring of behaviors, early intervention, and prevention of the violent activities.

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STORY-BASED COMMUNICATION WITH YOUNG CHILDREN: COGNITIVE, LINGUISTIC, EMOTIONAL AND RESILIENCE OUTCOMES THROUGH INTERACTIVE STORYTELLING

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Abstract: *Story-based communication is a high-leverage developmental context in early childhood because it integrates language, cognition, emotion, and social understanding within shared meaning-making. This paper synthesizes theoretical and empirical research on story reading, oral storytelling, and co-constructed narratives, with specific attention to feedback as a mechanism that both reveals and shapes comprehension. We argue that interactive storytelling outperforms passive exposure by promoting inferential processing, vocabulary growth, sustained attention, and emotion understanding through contingent adult-child dialogue. Evidence from cognitive neuroscience suggests that narrative listening recruits distributed networks supporting semantic integration and mental imagery, particularly in enriched literacy environments. Developmental studies indicate predictable growth in narrative competence from single-event recounts to coherent “classic narratives”, that include internal states. Socio-cultural theory frames story-based interaction as mediated learning in which children internalize cognitive tools through guided participation. Within this synthesis, we introduce ReNIMo, a responsive framework integrating cognitive activation, linguistic expansion, emotional mentalization, and adaptive meaning-making. ReNIMo foregrounds calibrated scaffolding and feedback-sensitive dialogue as core features of effective pedagogical communication practice. We outline classroom-aligned good practices, including think-aloud modeling, dialogic questioning, visual documentation, and structured co-construction. We also discuss ethically grounded opportunities for AI-supported conversational engagement as a supplementary tool for narrative practice. Pedagogical implications emphasize culturally relevant*

story selection, systematic documentation of narrative growth, and stage-appropriate scaffolding. Future research directions include longitudinal classroom studies, bilingual-context investigations, and careful evaluation of digital narrative tools under ethical constraints.

Keywords: *communication; storytelling; dialogic reading; narrative competence; formative feedback; emotional literacy; resilience.*

Introduction

Communication with young children is simultaneously linguistic, relational, and epistemic: it is a site where meaning is negotiated, attention is organized, and emotional experience becomes shareable. Within early childhood education, story-based interaction offers a uniquely concentrated context for these processes, because narratives provide structured temporal-causal frameworks while inviting children into a shared symbolic space. Stories do not merely “deliver” content; they organize experience, render inner states discussable, and create conditions for joint attention, inference, and perspective-taking. A growing body of research indicates that the developmental value of stories depends less on exposure and more on interaction quality. In other words, the decisive factor is not that children hear stories, but that they participate in story-based dialogue through questions, predictions, explanations, retellings, and emotionally attuned responses. Our comparative findings suggest that oral storytelling and interactive reading practices can promote more complex oral language and comprehension outcomes than passive formats, particularly when adult contributions are contingent and elaborative (Isbell et al., 2004; Mol et al., 2008; Whitehurst et al., 1988). The role of feedback is therefore not ancillary but structural: it functions as a formative mechanism through which educators diagnose comprehension, refine vocabulary, stabilize attention, and scaffold emotional meaning-making (Black & Wiliam, 2009; Tamis-LeMonda et al., 2001). Our paper integrates theoretical perspectives from communication sciences and narrative psychology, socio-cultural learning theory, cognitive neuroscience, and developmental research on language and socio-emotional competence. Its applied aim is to translate convergent evidence into pedagogically usable guidance, by articulating feedback-sensitive good practices in story-based communication. Building on this synthesis, we introduce the Responsive Narrative Interaction Model (ReNIMo) as an integrative framework describing how cognitive activation, linguistic expansion, emotional mentalization, and adaptive meaning-making co-

occur within effective story-based interactions. We use this framework to clarify developmental alignment, inform classroom practice, and outline implications for educators, including those working in linguistically diverse and bilingual environments.

Theoretical foundations of story-based communication

Narrative as cognitive architecture

Human cognition is fundamentally narrative in structure. Bruner (1990) argues that narrative thinking represents a primary mode through which individuals “organize experience and construct reality” (p. 11). Unlike paradigmatic-logical reasoning, narrative thought operates through temporality, intentionality, and meaning-making. For young children, stories provide structured frameworks for sequencing events, identifying causal relations, and anticipating outcomes within coherent symbolic systems. Narrative is not merely a literary form, but a “mode of thought and a vehicle for meaning-making” (Bruner, 1990, p. 5). From a neuroscience perspective, storytelling activates distributed neural networks involved in semantic processing, imagery, and emotional integration. Hutton et al. (2015) demonstrated that narrative exposure is associated with activation in temporal-parietal-occipital association cortices linked to mental imagery and language processing (pp. 469-470), with stronger activation patterns observed in enriched literacy environments (p. 471). These findings support the claim that stories recruit multimodal cognitive systems beyond passive perception. Developmentally, narrative exposure strengthens temporal sequencing and causal reasoning. Peterson and McCabe (1983) describe children’s progression toward “classic narratives” characterized by coherent temporal and causal integration (pp. 42-44). Similarly, Trabasso and Nickels (1992) emphasize that causal connectivity underlies narrative comprehension and recall (pp. 89-91). Narrative engagement also fosters symbolic mediation, aligning with Vygotsky’s (1978) view that higher mental functions develop through culturally mediated tools such as language (p. 57). Stories support theory of mind development by rendering internal states visible and discussable (Wellman, 2014, p. 112). Interactive pedagogical communication practices, including dialogic reading, operationalize these theoretical insights. Whitehurst et al. (1988) demonstrated that structured interactive reading accelerates language development, compared to passive listening (pp. 553-555), while longitudinal evidence confirms that high-quality narrative interaction predicts vocabulary and syntactic growth (Reese et al., 2010). Collectively, these findings affirm that narrative is constitutive of cognition and foundational for emergent literacy.

Language development and oral narrative complexity

Narrative competence develops through identifiable stages in early childhood. Peterson and McCabe (1983) report that two-year-olds typically produce single-event accounts (pp. 37-39), while three- to four-year-olds begin forming simple temporal sequences (pp. 42-44). By ages five to six, many children construct “classic narratives” featuring structured beginnings, conflicts, and resolutions (p. 45). This progression reflects not only linguistic growth, but also advances in executive functioning and social cognition. Narrative complexity evolves alongside syntactic and lexical sophistication. Children increasingly employ subordinating clauses, mental state verbs, and evaluative language when exposed to elaborative storytelling environments. Reese et al. (2010) found that elaborative adult–child reminiscing styles significantly predict later narrative elaboration and vocabulary development (p. 626). Adult scaffolding thus plays a structurally formative role. Comparative research indicates that oral storytelling may promote greater expressive language complexity than text-based reading alone. Isbell et al. (2004) observed stronger gains in oral language and story comprehension among children exposed to storytelling (pp. 160-162), attributing these outcomes to increased engagement and adaptive narrative modulation (p. 163). Dialogic reading further enhances vocabulary and comprehension through interactive prompting and expansion (Whitehurst et al., 1988, p. 556). Consistent with Vygotsky’s (1978) concept of the zone of proximal development (p. 86), these scaffolded interactions foster increasing autonomy in narrative production.

Emotional and social development through stories

Stories function as symbolic emotional laboratories in which children encounter complex affective experiences at a safe psychological distance. Through fictional characters, children explore fear, jealousy, courage, and moral conflict, enabling reflective processing without direct personal risk. Narrative interaction strengthens emotion labeling, empathy, perspective-taking, and conflict understanding. Denham et al. (2003) define emotional competence as the capacity to identify, regulate, and respond to emotions appropriately (pp. 238-240), capacities that are repeatedly practiced in story contexts where internal states are explicitly represented. Wellman (2014) highlights that theory of mind develops through conversational and narrative engagement that makes beliefs and intentions explicit (p. 112). By interpreting characters’ motivations, children refine their ability to attribute mental states. Interactive storytelling deepens emotional literacy through

reflective questioning. Aram and Aviram (2009) found that elaborative discussions about emotions during shared reading predict improved emotion understanding and social competence (2009, p. 75). Narrative dialogue also normalizes internal experiences, fostering socio-emotional regulation. Repeated exposure to emotionally complex narratives supports the internalization of adaptive interpersonal scripts.

Storytelling and resilience

Storytelling serves as a developmental resource for resilience by providing structured representations of adversity and recovery. Resilience is understood not as the absence of difficulty, but as adaptive functioning when facing challenge. Masten (2014) conceptualizes resilience as “ordinary magic,” emerging from supportive relationships and meaning-making processes (p. 7). Narrative engagement contributes to these adaptive systems by offering symbolic rehearsal of coping strategies. Through identification with characters who overcome obstacles, children internalize scripts that frame adversity as navigable. This mechanism aligns with Bandura’s (1977) theory of observational learning, which emphasizes the influence of modeled behavior on adaptation (p. 22). But resilience-building narratives must acknowledge authentic challenge, because overly sanitized stories may fail to provide meaningful coping models. Relational mediation remains central. When adults validate emotional struggle and invite personal connections, children integrate narrative experiences into autobiographical meaning-making. McAdams and McLean (2013) argue that coherent personal narratives are associated with psychological well-being and adaptive functioning (p. 233). Early exposure to structured storytelling may lay the groundwork for autobiographical coherence and long-term resilience. Story-based communication functions as both cognitive scaffold and protective developmental resource, supporting literacy, emotional regulation, and adaptive coping within a unified pedagogical framework.

Communication methods in story-based interaction

Story reading

Story reading in early childhood is characterized by shared attention to printed text and illustrations within an adult-guided framework. This practice supports emergent literacy components such as print awareness, vocabulary exposure, visual interpretation, and listening comprehension. Snow (1983) observed that shared book reading introduces children to the “conventions of written language” and fosters early metalinguistic awareness (p. 171). When adults explicitly reference print – pointing to words, tracking directionality, or

distinguishing text from images – they reinforce the symbolic function of written language. Interactive book reading also promotes vocabulary development. In a meta-analysis, Mol, Bus, de Jong, and Smeets (2008) demonstrated that elaborative shared reading significantly enhances expressive and receptive vocabulary compared to non-interactive formats (p. 998). Vocabulary growth occurs through repetition, semantic clarification, and contextual embedding within narrative discourse. Illustrations function as integral semiotic resources rather than decorative elements. Sipe (2008) describes picture books as “multimodal texts” in which meaning emerges from the interaction between image and word (p. 24). By guiding children’s attention to facial expressions, spatial cues, and visual symbolism, adults’ scaffold inferential integration across modalities. Listening comprehension is further strengthened through exposure to syntactic complexity and guided inference-making. Cain and Oakhill (2007) emphasize that early listening comprehension predicts later reading comprehension, particularly when children are supported in identifying motives and causal connections (p. 23). Such mediation reflects Vygotsky’s (1978) principle that learning occurs through socially guided participation (p. 86).

Storytelling (oral narrative without text)

Oral storytelling differs from story reading in that it relies on imaginative reconstruction rather than printed mediation. The storyteller adapts pacing, tone, gesture, and detail responsively, reflecting Bruner’s (1990) view of narrative as inherently dialogic and shaped by the “interaction between teller and listener” (p. 44). This responsiveness makes the relational dimension of storytelling particularly salient. Without fixed illustrations, children must generate internal representations of characters and settings, strengthening mental imagery and inferential processing. Hutton et al. (2015) report that narrative listening activates brain regions associated with semantic integration and visualization (pp. 469-471), supporting emergent literacy development. Isbell et al. (2004) found that children exposed to storytelling demonstrated higher attention levels and more complex oral language production than peers exposed only to book reading (pp. 160–162), attributing these outcomes to the dynamic and participatory nature of oral narrative (p. 163). Storytelling also allows flexible emotional modulation through prosody and gesture. Nelson (2006) notes that emotionally salient narrative exchanges are more likely to be encoded in autobiographical memory (p. 97). In classroom contexts, storytelling becomes an embodied communicative event in which

voice, gesture, and relational presence co-construct meaning and engagement.

Co-constructed storytelling

Co-constructed storytelling represents the most interactive form of story-based communication. In this format, adult and child collaboratively generate narrative elements, negotiate plot development, and elaborate character motivations. The adult functions as scaffold rather than sole narrator, organizing emerging ideas into coherent structures. From a socio-cultural perspective, co-construction reflects learning within the zone of proximal development. Vygotsky (1978) emphasized that higher mental functions originate in social interaction before becoming internalized (p. 57). Through collaborative storytelling, children experiment with narrative forms beyond their independent capacity, supported by guided prompting and peer contribution. This process strengthens narrative organization and autobiographical coherence. Fivush and Haden (2003) wrote that elaborative conversational styles foster more detailed and structured narrative accounts (p. 40). Cultural knowledge is simultaneously transmitted, as children negotiate meaning within culturally situated frameworks. Rogoff (2003) describes such guided participation as the mechanism through which children's appropriate cultural tools (p. 284). Co-construction also cultivates pragmatic competence. Turn-taking, perspective acknowledgment, and conflict negotiation become necessary within shared narrative creation and communication. As a result, children develop communicative reciprocity and adaptive language use aligned with shared goals. In its collaborative form, storytelling shifts from product to process, functioning as a site of cognitive growth, cultural transmission, communication skills and relational learning.

Feedback as a core mechanism in story-based communication

Understanding feedback in early childhood communication

In early childhood education, feedback must be understood not as mere correction but as contingent, meaning-oriented responsiveness that both reveals and shapes children's understanding. Within story-based communication, feedback functions as a diagnostic and developmental instrument simultaneously. Through children's spontaneous comments, questions, retellings, and emotional reactions, educators gain insight into comprehension depth, inferential reasoning, vocabulary acquisition, attentional stability, and emotional interpretation. Black and Wiliam (2009) define formative feedback as information used "to adapt teaching and learning activities to meet student needs" (p. 9),

emphasizing that feedback is effective when it informs subsequent interaction rather than merely evaluates performance. In narrative contexts, feedback takes multiple forms. Expansions enrich children's statements by adding syntactic or semantic complexity. For example, when a child states, "The wolf was angry," the adult may respond, "Yes, he was angry because he felt rejected and hungry," thereby modeling causal explanation and lexical precision. Clarification prompts such as "What do you mean by scared?" encourage metalinguistic awareness and semantic differentiation. Scaffolding questions – "What happened before that?" – support temporal sequencing and coherence. Validation statements – "That's an interesting idea" – reinforce narrative agency and communicative confidence. Research in language development consistently demonstrates the power of contingent responsiveness. Tamis-LeMonda, Bornstein, and Baumwell (2000, p. 761) found that maternal responsiveness to children's verbal initiatives significantly predicted later language outcomes. Responsiveness was defined not simply as frequency of speech, but as contingent alignment with the child's focus of attention. In story-based settings, such alignment allows feedback to operate within the child's zone of proximal development (Vygotsky, 1978, p. 86), where guided interaction fosters increasing narrative competence. Feedback in storytelling contexts is both interpretative and generative. It reveals what the child understands and simultaneously extends that understanding through structured dialogue.

Indicators of comprehension in young children, feedback and attention regulation

Assessing comprehension in early childhood requires attention to multiple indicators, both verbal and non-verbal. Children demonstrate text understanding when they retell narrative sequences coherently, predict plausible outcomes, identify character emotions accurately, make autobiographical connections, and incorporate newly acquired vocabulary into spontaneous speech. Paris and Paris (2003) argue that narrative retelling tasks provide reliable insight into children's comprehension because they require integration of temporal, causal, and thematic elements (p. 45). Prediction is particularly revealing of inferential reasoning. When children anticipate likely outcomes based on character motivations, they demonstrate integration of explicit and implicit narrative cues. Cain and Oakhill (2007) emphasize that inferential comprehension, rather than literal recall alone, differentiates strong from weak comprehenders in early literacy development (p. 28). Educators should frame comprehension as an active interpretative process rather than passive recall. Non-verbal signals are equally

informative. Sustained gaze, facial expression shifts during emotionally charged scenes, body orientation toward the speaker, and voluntary participation patterns offer insight into attentional engagement and emotional resonance. According to Tomasello (2003), joint attention is foundational to communicative development because it signals shared intentionality (p. 21). During story-based interaction, joint attention between adult and child reflects cognitive alignment and narrative immersion. Practical assessment should integrate structured retelling opportunities, predictive questioning, and observational sensitivity to non-verbal cues. Such multimodal evaluation provides a more accurate understanding of narrative comprehension than isolated recall questions.

Vocabulary acquisition is particularly responsive to contingent feedback strategies. When adults expand children's utterances by introducing semantically precise alternatives, they model lexical refinement within meaningful contexts. For instance, if a child says, "He's mad," and the teacher responds, "Yes, he feels frustrated because his plan didn't work," the adult introduces a more differentiated emotional term, while embedding it within causal explanation. This process aligns with what Hart and Risley (1995) described as "rich linguistic environments," in which lexical diversity and contextual elaboration predict later vocabulary breadth (p. 132). Mol et al. (2008, p. 1002) found that interactive book reading significantly improves expressive vocabulary, particularly when adults engage in elaborative discussion rather than repetitive labeling. Contingent expansions operate most effectively when they are semantically aligned with the child's focus and embedded within narrative flow. Over time, children internalize these lexical distinctions, integrating them into spontaneous speech and narrative production. Vocabulary growth in storytelling contexts extends beyond isolated word acquisition. Children also acquire discourse markers, mental state verbs, and causal connectors, all of which contribute to narrative coherence. Reese et al. (2010, p. 627) demonstrated that elaborative conversational styles predict not only vocabulary growth, but increased narrative complexity. Feedback supports both micro-level lexical precision and macro-level narrative organization.

Interactive storytelling inherently supports attention regulation by alternating listening and speaking roles and feedback intensifies this regulatory function. When educators respond meaningfully to children's contributions, children perceive their participation as consequential, thereby strengthening intrinsic motivation. According to Deci and Ryan's (2000, p. 70) self-determination theory, autonomy-supportive interactions enhance engagement and persistence. Narrative

dialogue that acknowledges children's interpretations promotes a sense of agency within the communicative process. Predictive questions – “What do you think will happen next?” – stimulate anticipatory cognition and sustain engagement across narrative arcs. Such prompts activate executive functioning processes related to planning and hypothesis generation. Blair and Raver (2015) emphasize that early executive function skills, including sustained attention and inhibitory control, are strengthened in contexts that require active cognitive participation (p. 711).

Responsive feedback can re-engage distracted children by reorienting attention toward narrative meaning. When a child's focus wanes, a personalized prompt linked to their earlier comment (“You said he might hide – do you still think that?”) restores cognitive alignment. This way, feedback becomes a regulatory mechanism, supporting both attentional persistence and narrative immersion.

Feedback and resilience development

Feedback also plays a central role in fostering resilience through storytelling. When children interpret challenging narrative events, educator responses can frame adversity as manageable and growth-oriented. For example, when a child observes, “She lost everything,” an adult might respond, “Yes, that was very hard. What helped her keep going?” Such reframing invites identification of coping strategies rather than fixation on loss. Masten (2014) argues that resilience develops through adaptive systems, including supportive relationships and opportunities for meaning-making (p. 9). Story-based feedback contributes to both systems, by validating emotional reactions while guiding children toward constructive interpretations. This process resembles cognitive reappraisal, a regulatory strategy associated with emotional resilience (Gross, 2015, p. 10). Resilience-building feedback does not minimize difficulty. Instead, it acknowledges emotional weight while highlighting relational or internal resources. When educators model reflective interpretation – “She was scared, but she remembered her friend's advice” – they demonstrate adaptive narrative restructuring. Over time, children internalize such coping scripts, applying them beyond fictional contexts. Within story-based communication, feedback serves as a bridge between comprehension and personal integration. It reveals understanding, refines language, regulates attention, and scaffolds adaptive meaning-making. In the following section, these mechanisms will be translated into structured good practices and concrete classroom applications, where feedback-sensitive storytelling becomes an intentional pedagogical methodology rather than a spontaneous interactional byproduct.

Practical applications: good practices in early childhood settings

The translation of theoretical insights into pedagogical action requires the identification and articulation of evidence-informed good practices. Within story-based communication, good practice is not defined by frequency of storytelling alone, but by the quality of interaction, the intentionality of feedback, and the developmental responsiveness embedded in narrative exchange. The following subsections outline structured, research-grounded approaches that operationalize story-based communication as a high-impact educational practice.

Think-aloud strategy as a model of metacognitive good practice

The think-aloud strategy represents a core example of good practice in story-based communication because it renders implicit cognitive and emotional processes explicit. When educators verbalize their interpretative thinking – “I notice the character is quiet now. I wonder if she feels embarrassed” – they model inferential reasoning, emotional interpretation, and reflective stance-taking. This practice aligns with metacognitive theory, which posits that awareness of thinking processes enhances comprehension and transfer (Flavell, 1979, p. 908). In narrative contexts, think-aloud modeling supports children’s development of inferential comprehension. Pressley and Afflerbach (1995) argue that skilled comprehenders actively generate hypotheses, monitor coherence, and revise interpretations (p. 41). By externalizing such processes, educators scaffold children’s movement toward strategic narrative engagement. The think-aloud strategy does not impose interpretation but invites co-reflection, thereby maintaining dialogic integrity. From a socio-cultural perspective, this practice operates within Vygotsky’s (1978) framework of mediated learning, where cognitive tools are gradually internalized through guided participation (p. 86). Repeated exposure to adult modeling of emotional reasoning also supports theory of mind development, as children observe how internal states are inferred from contextual cues (Wellman, 2014, p. 112). As good practice, the think-aloud strategy integrates metacognition, emotional literacy, and inferential reasoning within a single pedagogical act.

Dialogic questioning as structured good practice

Dialogic questioning constitutes another foundational good practice in early childhood storytelling. Unlike traditional recitation formats that prioritize recall, dialogic frameworks emphasize elaboration, prediction, and personal connection. Whitehurst et al. (1988) demonstrated that structured dialogic reading significantly enhances expressive vocabulary and narrative competence (p. 556). The

effectiveness of such questioning lies not in the quantity of prompts but in their cognitive depth. Open-ended and inferential questions stimulate higher-order processing by requiring children to integrate narrative elements and articulate causal reasoning. Cain and Oakhill (2007) highlight that inferential questioning is a main factor in the development of deep comprehension skills (p. 28). Distancing prompts – inviting children to relate story events to their own experiences – strengthen autobiographical linkage and meaning construction, a process associated with narrative identity development (McAdams & McLean, 2013, p. 233). As good practice, dialogic questioning is characterized by contingent responsiveness. Mol et al. (2008) emphasize that vocabulary gains are maximized when adult responses are semantically aligned with children's contributions (p. 1002). Dialogic practice must remain adaptive rather than scripted. Its quality depends on sensitivity to children's developmental stage, linguistic repertoire, and emotional readiness.

Visual documentation as reflective good practice

Visual documentation – through drawings, photographs, symbolic mapping, or narrative sequencing charts – constitutes a good practice that supports multimodal meaning-making. Young children often possess narrative understanding that exceeds their expressive language capacity. Providing visual representational tools allows children to externalize comprehension and organize narrative structure spatially. Sipe (2008) conceptualizes picture-based engagement as multimodal literacy, where meaning emerges from the interaction of visual and verbal modes (p. 24). Reggio Emilia-inspired pedagogical approaches similarly emphasize documentation as a reflective tool that makes learning visible and revisitable (Rinaldi, 2006, p. 67). When children revisit visual artifacts of storytelling, they consolidate temporal sequencing, character perspective, and causal integration. Visual documentation also enhances metacognitive reflection. By asking children to explain their drawings or symbolic representations, educators gain insight into narrative interpretation while reinforcing expressive clarity. As good practice, visual documentation bridges linguistic limitations and supports inclusive participation, particularly in linguistically diverse classrooms.

AI-supported conversational agents as emerging good practice

The integration of AI-supported conversational agents represents an emerging domain of good practice when implemented ethically and pedagogically. Takacs and Bus (2018) report that interactive digital storybooks with dialogic features can enhance engagement and

comprehension compared to passive formats (p. 889). The added value lies in structured responsiveness and adaptive questioning. When conversational AI systems simulate dialogic prompts – asking predictive or inferential questions – they may extend narrative engagement beyond classroom time. However, their pedagogical effectiveness depends on alignment with developmental principles. Human mediation remains indispensable for emotional validation and contextual nuance. As Deci and Ryan (2000) caution, intrinsic motivation thrives in relationally supportive environments (p. 70). AI-supported storytelling must supplement rather than replace adult-guided interaction. As good practice, digital integration requires ethical safeguards, developmental appropriateness, and critical media literacy. When thoughtfully designed, AI tools can reinforce vocabulary practice, narrative sequencing, and comprehension monitoring.

Co-constructed classroom narrative: a model of integrated good practice

An illustration of good practice can be observed in co-constructed narrative extension following story reading. In a kindergarten classroom, after engaging with a story about a character afraid of the dark, children were invited to propose an alternative ending. The teacher scaffolded reflective thinking by asking, “What could help the character feel safer?” This prompt shifted focus from problem description to solution generation, fostering resilience-oriented narrative framing. Children suggested strategies such as carrying a lantern, seeking a friend’s support, or reinterpreting shadows imaginatively. The educator expanded vocabulary by introducing terms such as “courage,” “reassurance,” and “imagination,” while guiding temporal sequencing (“What would happen first?”). Observational follow-up indicated increased use of emotional labeling and cooperative problem-solving language during peer interactions. This example integrates multiple good practices simultaneously: dialogic questioning, contingent feedback, vocabulary expansion, emotional reframing, and collaborative construction. The pedagogical impact extends beyond immediate comprehension, influencing socio-emotional discourse patterns within the classroom community. Such integrative practice reflects what Masten (2014) describes as adaptive systems embedded in ordinary developmental contexts (p. 9). Through structured narrative dialogue, children rehearse coping strategies, refine expressive language, and internalize collaborative norms. Across these applications, good practice in story-based communication is defined by intentionality, responsiveness, developmental alignment, and relational depth. Storytelling becomes pedagogically

transformative when it integrates metacognitive modeling, dialogic engagement, multimodal representation, technological discernment, and collaborative meaning-making. Appearing in this framework, storytelling is no longer an ancillary literacy activity, but a structured developmental intervention that simultaneously advances language competence, emotional literacy, cognitive flexibility, and resilience.

The Responsive Narrative Interaction Model (ReNIMo)

The theoretical and empirical synthesis developed throughout our study invites the articulation of an integrative framework capable of structuring good practices in story-based communication. Building on socio-cultural theory (Vygotsky, 1978), narrative psychology (Bruner, 1990), dialogic reading research (Whitehurst et al., 1988), and resilience theory (Masten, 2014), we propose the Responsive Narrative Interaction Model (ReNIMo) as a coherent pedagogical architecture for early childhood education. ReNIMo conceptualizes storytelling as a responsive, scaffolded, emotionally attuned, and cognitively generative interaction. Rather than treating storytelling techniques as isolated strategies, the model integrates four mutually reinforcing dimensions: cognitive activation, linguistic expansion, emotional mentalization, and adaptive meaning-making. These dimensions function dynamically within narrative exchange and are operationalized through research-informed good practices.

Cognitive activation

The first dimension of ReNIMo emphasizes inferential engagement and executive functioning. Narrative interaction becomes cognitively generative when children are invited to predict outcomes, explain causal links, and reconcile narrative inconsistencies. Peterson and McCabe (1983) demonstrate that children's progression toward structured "classic narratives" reflects increasing temporal and causal integration (pp. 42-44). We suggest that such progression is significantly strengthened through dialogic prompting. Cain and Oakhill (2007) wrote that inferential reasoning differentiates deep comprehension from superficial recall (p. 28). Within ReNIMo, cognitive activation is cultivated through think-aloud modeling, predictive questioning, and hypothesis testing. The educator's role shifts from transmitter of meaning to facilitator of cognitive construction.

Linguistic expansion

The second-dimension foregrounds language as co-constructed discourse. Vocabulary growth and syntactic sophistication are most

effectively fostered through contingent expansions and elaborative feedback. Mol et al. (2008) confirm that interactive reading practices significantly enhance expressive vocabulary when adult responses align with children's contributions (p. 1002).

We suggest that linguistic expansion within ReNIMo is characterized not by correction, but by amplification. Mental state verbs, causal connectors, and evaluative language are introduced within meaningful narrative contexts. Reese et al. (2010) demonstrate that elaborative conversational styles predict later narrative complexity (p. 626), reinforcing the idea that language development is relationally mediated rather than mechanically delivered.

Emotional mentalization

The third-dimension centers on emotional literacy and theory of mind. Narrative interaction externalizes internal states, enabling children to interpret beliefs, intentions, and affective nuance. Wellman (2014) underscores that theory of mind develops through conversational engagement that makes mental states explicit (p. 112). Within ReNIMo, emotional mentalization is cultivated through reflective questioning and validation-based feedback. Aram and Aviram (2009) show that emotion-focused dialogue during shared reading enhances social competence (p. 75). We suggest that emotional attunement is not ancillary, but structurally central to story-based good practices. Cognitive activation without emotional resonance risks fragmentation; emotional discussion without structural coherence risks diffusion. ReNIMo integrates both.

Adaptive meaning-making

The fourth dimension integrates resilience theory into narrative pedagogy. Story-based interaction becomes developmentally protective when it frames adversity as manageable and relationally navigable. Masten (2014) conceptualizes resilience as emerging from adaptive systems embedded in everyday contexts (p. 9). We suggest that narrative dialogue functions as one such system. When children collaboratively reframe narrative challenges and identify coping strategies, they rehearse adaptive scripts. McAdams and McLean (2013) argue that coherent narrative construction is associated with psychological well-being (p. 233). Within ReNIMo, adaptive meaning-making is achieved through guided reframing, solution-oriented questioning, and validation of emotional struggle.

Integrative structure of ReNIMo

The conceptual contribution of ReNIMo lies in articulating the interdependence of these four dimensions. Cognitive activation stimulates inferential reasoning; linguistic expansion refines expressive precision; emotional mentalization deepens social understanding; adaptive meaning-making supports resilience. We propose that effective story-based good practices must integrate all four within responsive interaction. ReNIMo does not prescribe rigid procedures but offers a flexible architecture adaptable across educational contexts. Its strength lies in coherence rather than novelty of individual components.

Developmental progression of narrative competence within ReNIMo

An essential dimension of implementing ReNIMo as a framework for good practices lies in aligning narrative scaffolding with children's developmental progression. Narrative competence evolves predictably during early childhood, and pedagogical responsiveness requires sensitivity to these stages. Between ages two and three, children typically produce single-event recounts with minimal causal integration (Peterson & McCabe, 1983, pp. 37-39). At this stage, narrative interaction should emphasize temporal anchoring and basic sequencing support. Adults may model simple connectors ("and then," "after that") and reinforce emerging attempts at event linkage. Within ReNIMo, cognitive activation is gentle and structurally supportive, while linguistic expansion focuses on naming actions and basic emotions. Between ages three and four, children begin organizing events into sequences and demonstrate emerging emotional labeling (Peterson & McCabe, 1983, pp. 42-44). Here, dialogic questioning can introduce causal prompts ("Why did that happen?") and encourage elementary perspective-taking. Emotional mentalization becomes increasingly central, as children are capable of identifying basic affective states in characters. From four to five years of age, narratives often include recognizable problem-resolution structures and early forms of perspective differentiation. At this stage, adaptive meaning-making can be intentionally scaffolded. Educators may invite children to propose alternative endings, generate coping strategies, and articulate internal motivations. Inferential reasoning becomes more robust, and linguistic expansion may include subordinating clauses and mental state verbs. By ages five to six, many children construct what Peterson and McCabe (1983) describe as "classic narratives" characterized by coherent structure, identifiable conflict, and inclusion

of internal states (p. 45). ReNIMo at this stage can operate at full integrative capacity: cognitive activation, emotional mentalization, linguistic refinement, and resilience-oriented reframing function synergistically. Dialogic storytelling may approach collaborative authorship, with children sustaining narrative coherence independently. We suggest that developmental alignment is not merely methodological precision but ethical responsibility. Over-scaffolding may restrict autonomy, while under-scaffolding may result in fragmentation. ReNIMo therefore emphasizes calibrated responsiveness rather than uniform technique.

Pedagogical implications: structuring good practices in educational contexts

The practical implications of ReNIMo extend beyond individual storytelling sessions and require systemic integration into early childhood pedagogy. We suggest that story-based communication should be positioned not as an ancillary literacy activity but as a central developmental intervention. First, interactive engagement should consistently take precedence over passive reading formats. Research repeatedly demonstrates that dialogic interaction enhances vocabulary acquisition and narrative complexity more effectively than unidirectional exposure (Whitehurst et al., 1988, p. 556; Mol et al., 2008, p. 1002). Educators should therefore structure storytelling sessions around reciprocal exchange rather than performance. Second, dialogic techniques should be embedded systematically rather than episodically. Inferential questioning, think-aloud modeling, and reflective prompts cultivate deeper comprehension and emotional awareness (Cain & Oakhill, 2007, p. 28). The effectiveness of these strategies depends on regular integration into classroom routines. Third, contingent feedback must function as the core regulatory mechanism of story-based interaction. As previously discussed, responsive expansions and validation-based scaffolding strengthen linguistic precision, attention regulation, and resilience-building processes (Tamis-LeMonda et al., 2001, p. 761). Fourth, narrative selection requires cultural and contextual sensitivity. Stories that reflect children's lived realities enhance identification and autobiographical linkage, supporting adaptive meaning-making. Rogoff (2003) reminds us that learning is culturally situated (p. 284), and narrative pedagogy must reflect this principle. Fifth, emotional reflection should be explicitly cultivated. Emotion-focused dialogue during shared reading predicts improved social competence and emotional differentiation (Aram & Aviram, 2009, p. 75). Such reflection supports theory of mind development and relational competence. Finally, documentation

of narrative growth – through observational records, retellings, visual artifacts, and reflective dialogue – provides longitudinal insight into developmental progression. Narrative competence is not static; it evolves through cumulative interaction. Systematic documentation enables educators to align scaffolding with individual trajectories. We suggest that when structured through ReNIMo, these good practices transform storytelling into a coherent pedagogical architecture capable of simultaneously advancing cognitive, linguistic, emotional, and adaptive domains.

Conclusion

Story-based communication is best understood as a multidimensional developmental intervention rather than an auxiliary classroom routine. When stories are enacted through responsive dialogue, children are supported in organizing experience temporally and causally, refining expressive language, interpreting internal states, and rehearsing adaptive responses to challenge. Across the literatures reviewed, a consistent pattern emerges: the strongest outcomes are associated with interactive formats in which adults prompt inference, expand child language contingently, and validate emotional meaning while maintaining narrative coherence (Black & Wiliam, 2009; Mol et al., 2008; Whitehurst et al., 1988). ReNIMo consolidates this evidence into a coherent architecture for practice. Its contribution is to treat cognition, language, emotion, and resilience not as separate “targets” but as interdependent dimensions of a single interactional system. Within this model, feedback is not a corrective afterthought; it is the mechanism that links comprehension to expression, attention to participation, and emotion to narrative interpretation. The model also emphasizes developmental calibration: effective scaffolding respects children’s narrative stage, supporting progression from single-event recounts toward coherent narratives that include internal states and perspective-taking (Peterson & McCabe, 1983). For educators, the implications are practical and principled. High-quality story-based work prioritizes dialogic exchange over performance, systematically integrates inferential and distancing prompts, documents narrative growth longitudinally, and selects stories that are culturally meaningful and emotionally usable. Emerging digital tools, including conversational AI, may extend narrative practice when implemented ethically and as a supplement to – not a substitute for – human attunement and contextual judgment (Takacs & Bus, 2018). Future research should prioritize longitudinal classroom-based designs that measure developmental trajectories under feedback-rich interventions, with particular attention to bilingual contexts and to the conditions

under which digital supports enhance rather than dilute interaction quality.

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EDUCATIONAL QUALIFICATIONS, JOB TENURE, AND JOB SECURITY AS PREDICTORS OF INNOVATIVE WORK BEHAVIOUR AMONG STATE AGENCIES FOR MASS EDUCATION EMPLOYEES IN SOUTHWEST NIGERIA

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Abstract: *Innovative Work Behavior (IWB), an employee's ability to explore, generate, realize, promote and sustain new ideas, is a prerequisite for job performance and goal attainment in the workplace. However, evidence indicated low IWB of State Agencies for Mass Education (SAMEs) in southwestern Nigeria, which has influenced effective delivery of mass education programmes. This study, therefore, investigated the predictive power of educational qualifications, job tenure, and job security on employees' innovative work behavior in southwest Nigeria. The study employed an explanatory sequential mixed-method design. Purposive sampling was used to select five (Oyo, Osun, Ogun, Ekiti and Ondo) out of six states in southwestern Nigeria owing to their homogenous patterns in programme*

monitoring, evaluation, and implementation. Two-hundred and eight (208) SAMEs employees were sampled. The questionnaire tagged Innovative Work Behaviour and Job Security were used to elicit information from the respondents, while interview guide was used to obtain information from the executive secretaries of the SAMEs. The quantitative data were analyzed using mean, standard deviation and Analysis of Variance (ANOVA) at 0.05 significance level, while the qualitative data were content-analyzed. The study revealed that the employees of the SAME maintained low degree of job security ($\bar{x}$ = 2.22) at the agency level. The results revealed that the IWB of the SAME personnel did not vary statistically significantly based on their educational background ($F_{2, 198} = 2.542$; $p_{0.081} > 0.05$). Finally, the study indicated a statistically significant difference in the SAME employees' IWB on the basis of their job tenure $F_{(3, 197)} = 7.081$ ($p_{0.000} < 0.05$). The SAME employees' IWB differed in favor of those who had spent 6 years and above compared with their counterparts that did not. The study concluded that while employees exhibited a low orientation towards job security, their Innovative Work Behavior (IWB) was not significantly influenced by their educational background. However, job tenure emerged as a significant factor, with employees having 6 years or more of service demonstrating higher IWB. The study recommended among other that the government and another concerned stakeholder should priorities job security by providing employees with a sense of stability and permanence. They should introduce programmes that prioritize employee retention, recognizing that high turnover rates can negatively impact innovation and creativity. Creating opportunities for professional development, providing competitive compensation and benefits, and fostering a positive and supportive work environment are some strategies to do this.

Keywords: *innovative work behavior; educational qualifications; job security; job tenure.*

Introduction

Literacy is crucial for a nation's progress, enabling citizens to navigate daily life, adapt to change, and contribute to society. It opens doors to

opportunities and empowers individuals to thrive in a rapidly changing world. Non-formal education initiatives fill gaps left by formal systems, targeting marginalized groups and out-of-school children (Kester, Gbenro, and Ogidan, 2021). The setup of NMEC and SAME/AANFE agencies ensures a structured approach to tackling literacy gaps among adults and out-of-school individuals. NMEC sets policies and provides support, while SAMEs implement programs and adapt policies to local needs, targeting vulnerable groups like women and nomads (Wami, 2022).

The establishment of SAME is a timely solution to Nigeria's literacy gap, given that 31.62% of Nigerians are non-literate (World Bank, 2022). Globally, 773 million adults struggle with basic literacy, with 580 million in E-9 countries like Nigeria (UNESCO, 2021). In some countries, formal education hasn't guaranteed literacy, e.g., in Pakistan, Bangladesh, Uganda, and Nigeria, only 49.6%, 33.9%, 27.2%, and 19.5% of elementary graduates can read/write, respectively (World Bank, 2022). Significant out-of-school populations exist across Nigeria's zones: South-East (19%), South-South (24%), North-Central (26%), North-East (33%), South-West (22%), and North-West (25%). In southwest states, rates vary: Ekiti (17%), Lagos (19%), Oyo (20%), Ondo (22%), Ogun (26%), and Osun (27%) (National Bureau of Statistics Report, 2020).

Aderinoye and Ladan (2021) highlighted that Nigeria faces significant literacy challenges: one-third of children are out of school, and one in three or four adults is non-literate. This has economic implications, with global costs estimated at \$1.2 trillion in GDP decline yearly, Nigeria losing around \$4.9 billion (Cree, Kay & Steward, 2022). The high non-literacy rate might be linked to low Innovative Work Behaviour (IWB) among State Agency for Mass Education (SAME) employees. This could be further enhanced or marred by SAME employees' educational qualifications, job security and job tenure, respectively.

Educational qualifications are official confirmations, typically in the form of certificates, diplomas, or degrees, indicating the successful completion of an education programme or stage for employees (Amegayibor, 2021). Workers with advanced degrees like Master's or Ph.D. holders, are likely to display IWB because of their superior knowledge, skills, and critical thinking abilities. This to infer that higher educational qualifications can enhance employees' creativity, problem-solving skills, and adaptability which are crucial for IWB. The SAME might enhance its literacy mandate and promote creative by focusing on the educational qualifications of its employees especially the Adult and Mass literacy Officer (AMLO).

Job tenure is the duration an employee has with an organisation which indicate their seniority and experience. Employee loyalty, job stability, and progression prospects are all impacted by promotions, pay raises, and perks (Raja and Madhavi, 2018). Job tenure could be categorised into short-term, medium-term, and long-term. This varies for employees and organisations. In the short-term, employees often experience probationary periods, while in the long-term, employees gain more autonomy and influence. There is a need to note that tenured employees with extensive experience might be in position to provide a competitive advantage to organisations compare with his/her counterparts that lack similar experience.

Job security is a fundamental aspect that transcends organisational boundaries which seem to influence employees' stability, morale, and job satisfaction. Job security is the general certainty that an employee will remain employed at their present position for the foreseeable future (Butali and Njoroge, 2018). Job security creates a climate of confidence and commitment among employees. Stable employment guarantees a steady income. The success of the business and the team as a whole might be significantly impacted by job security. Employees' job security is critical for organisational survival and expansion, respectively.

Previous studies on the poor performance of SAME employees have focused largely on Personalised System of Instruction (Kester and Okemakinde (2008), compensation, resource provision, allocation and utilisation (Oyelami and Alokun 2019; Jonathan, 2020; Kester and Owojuyigbe, 2021), available programmes, instructors, accessibility, clientele distribution, and facilities (Soyele and Egunyomi, 2020), insufficient classrooms, reading facilities, educational resources, and power supply (Joseph, Ayodele, and Sia, 2014), with little or no attention on employees' IWB.

IWB-focused studies explored predictors such as leadership styles and training opportunities (Khaola and Oni, 2020; Aransi, and Akinyooye, 2025), gender and age (Aransi, Akinyooye, Odusanya, Sanni, and Babawale, 2025), and workplace happiness (Moreno and Ibara, 2017). In view of this, attention has not been fully tailored towards the predictive power of educational qualifications, job tenure and job security on SAME employees' IWB in Southwestern Nigeria. Hence, the gap filled by this study.

Objective of the Study

The study's broad objective was to explore the predictive influence of educational qualifications, job tenure, and job security on SAME

employees' innovative work behaviour in southwest Nigeria. Specifically, the study aimed to;

- i. determine the level of job security maintained by SAME employees in Southwestern, Nigeria; and
- ii. investigate the differences in SAME employees' IWB on the basis of job tenure, and educational qualifications in Southwestern, Nigeria.

Research Questions

The following questions guided the study.

- i. What is the level of job security maintained by SAME employees in Southwestern, Nigeria?
- ii. What are the differences in SAME employees' IWB on the basis of job tenure, and educational qualifications in Southwestern, Nigeria?

Literature Review

Bekele and Singh (2022) examined how workers' creative behavior was affected by differences in demographic traits. The finding indicated that employees with advanced educational qualifications demonstrate more innovative work practices. Furthermore, Research revealed that individual employees with greater work experience tagged job tenure usually exhibit more innovative work practices than their counterparts with little experience. Leong and Rasli (2014) found no correlation between employees' innovative work habits and their educational attainment or sex. Sari and Adi (2021) reported no significant difference in educational level and employees' IWB during the global pandemic.

Throughout history, the human race has been concerned about security. It indicates a desire to maintain the status quo while believing that events and future trends of change will be predictable. Job security is a universal need; however, its prevalence differs between countries. A multitude of countries remain profoundly worried about the issue of unemployment and the stability of employment. Job insecurity increases the likelihood of individuals participating in creative work activities, as shown by the COVID-19 pandemic and its impact on companies and organizations. Two forms of work instability may be differentiated: quantitative and qualitative. Quantitative work insecurity pertains to the continuity of employment, while qualitative job insecurity emphasizes the sustainability of different aspects of the job (Ham and Salendu, 2022).

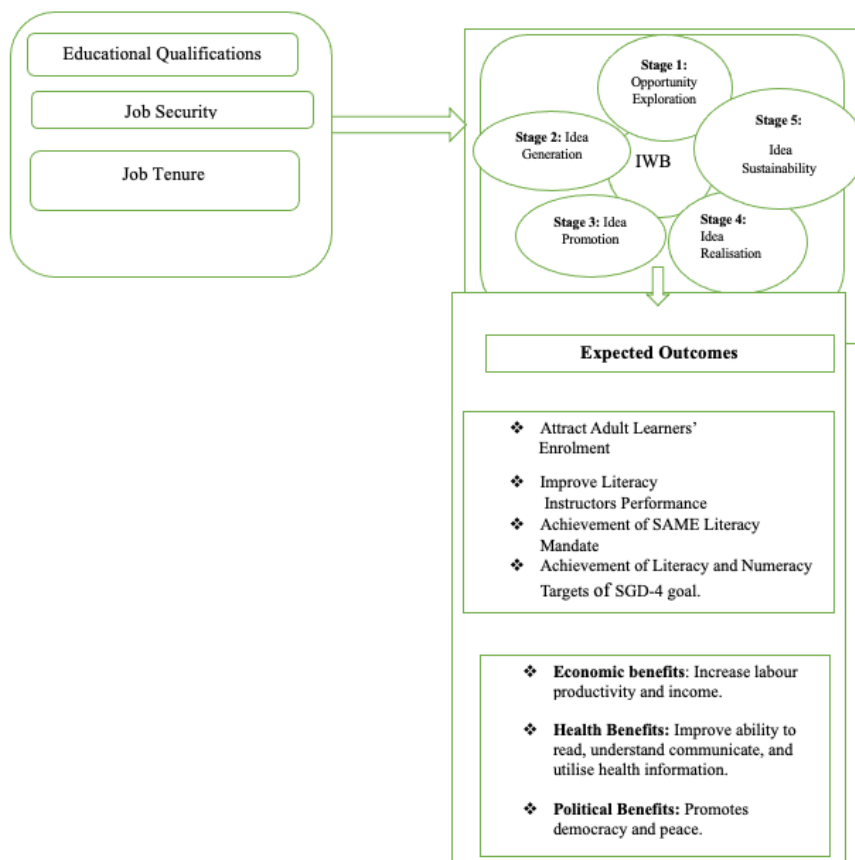
Employees seek employment security, whereas employers want to hire new people or keep their current staff (Domfeh and Hunsaker, 2020). The number of employment losses will rise correspondingly as the

number of available jobs decreases. "Job security" refers to the assumption of a worker that their employment would be consistent and stable. Job security may be seen by workers as an indication that their bosses are concerned about their welfare, which might result in more constructive interactions and better working relationships (Du, 2022). Most people agree that employment assurance is a good measure of job satisfaction. Job security, according to Kumar (2019), is the possibility that an individual will continue to work. However, work satisfaction is often lower for employees who feel less secure than for those who feel safer. Wang, Lu, and Siu (2015) identified an inverse relationship between heightened work insecurity and job performance. Shouvik, Hisam, and Baomar (2018) assert that the various facets of job security significantly affect employee satisfaction and performance. In addition, they argued that employees' perception of security at work is also influenced by their position in the labor market, namely the kind of job they have. Compared to temporary workers, permanent employees had more job security. Sverke and Hellgren (2001) agreed that employees who experience job uncertainty are more motivated to enhance their performance in order to secure their position within the business. In addition, they discovered that job instability impairs workers' overall well-being, attitudes, and participation at work as well as their faith in management.

Butler, Brennan-Ing, Wardamasky, and Ashley (2014) discovered that older age, residing in rural areas, having poorer physical function, earning higher salaries, experiencing a stronger sense of autonomy in the workplace, and having less frequent sentiments of personal success are factors that contribute to longer employment duration among home care aides.

Cheng and Chan (2008) discovered a direct correlation between work uncertainty and the desire to leave a job, as well as the detrimental impact of instability on one's health. Their results showed that workers who had been with the organization for a shorter time had a stronger association between job security and turnover than those who had been there for a longer time. Furthermore, this association was more pronounced among younger workers than among older ones. Conversely, individuals who had worked for the firm longer saw a greater negative effect on health outcomes from job insecurity than those who had been there for a shorter amount of time. In addition, this negative impact was more severe among older employees compared to younger ones.

Conceptual Framework



The conceptual framework exhibits the interplay between dependent variable (IWB) and independent variables comprised educational qualifications, job security and job tenure. From the framework, employee educational qualifications can have a dual impact on innovative work behavior. With respect to positive direction, higher education may enhance critical thinking and problem-solving skills thereby fostering innovation. On the part of negative impact, higher qualifications may lead to rigid thinking patterns or overemphasis on established practices, hence, leading to stifling creativity among employees.

Job security can have both positive and negative effects on innovative work behavior. On the positive side, secure employees are more likely to take risks, suggest new ideas, and engage in creative problem-solving. On the negative side, job security may lead to complacency, reducing motivation to innovate and improve processes. Job tenure has

a complex relationship with innovative work behaviour. On one hand, longer tenure can bring expertise and organizational knowledge, enhancing innovation. On the other hand, it may lead to stagnation and resistance to change, hindering innovation. However, Enhanced innovation in State Agency for Mass Education leads to improved adult learner enrolment, instructor performance, and achievement of literacy goals, directly resulting in economic, health, and political benefits for individuals and society.

Methodology

Research Design

This research employed an explanatory sequential mixed-method design. This design enables the integration of both qualitative and quantitative methodologies for data gathering and interpretation within a single study subject. This design is considered invaluable because the data collected from the instrument's qualitative section (Key Informant Interview, KII) was utilized to complement and better clarify the empirical results of the quantitative instrument (questionnaire).

Population, Sample Size and Sampling Techniques

The target population comprised all two hundred and thirty-five (235) permanent employees of the SAME in the five southwestern states, Nigeria.

The study's sample size was two hundred and eight (208) SAME employees of the officer cadres and above (Level 8 and above). This sample was taken from five southwestern states of Nigeria using multi-stage and purposive sampling procedures. Lagos State was not included in the sample states since it was utilized to evaluate the instrument's reliability.

The SAME employees were selected from officer cadres and above using the purposive sampling approach. The reason being that the SAME employees of the officer cadres and above are saddled with the responsibilities of direct evaluation, monitoring, and implementation of literacy-oriented programmes of the agency. Two stages were created in each of the five states used. The first stage consisted of the respondents scheduled for the questionnaire, while the second stage contained the participants for the Key Informant Interview (KII).

Two hundred and three (203) SAME employees of the officer cadres and above, excluding the executive secretaries or coordinating directors of the agency were enumerated for the questionnaire. This consisted of forty-nine (49), twenty-six (26), thirty-four (34), sixty-four (64) and thirty (30) sampled respondents from Oyo, Ondo, Ekiti, Ogun and Osun States, respectively. Five SAME executive

secretaries/coordinating directors were purposively enumerated for Key Informant Interviews. Executive secretaries, coordinating directors, and literacy unit directors are responsible for managing human and material resources to achieve the agency's mandate.

Instruments

The study employed the IWB Questionnaire (IWBQ), and Job Security Questionnaire (JSQ), while educational qualification and job tenure surfaced under demographic characteristics of the instrument. The Key Informant Interview guide was used to collect information for the qualitative section. These instruments are discussed as thus:

Innovative Work Behaviour Questionnaire (IWBQ)

The IWB of SAME employees was proxied using a modified version of the multi-dimensional IWB construct created by Lambriex-Schmitz *et al.*, (2020). This instrument consisted of forty-four question items that were utilized by academic and non-academic staff members in the Netherlands' vocational education system. Four items for opportunity exploration, seven for idea generation, seven items for idea promotion, nine items for idea realization, and seventeen items for idea sustainability made up the construct, which was separated into five dimensions. Consequently, twenty-five of the forty-four elements deemed important were refined and put to use. Each of the following areas was covered by five components: opportunity exploration, idea generation, promotion, realization, and sustainability. The Likert scale employed are: 5 = Very High Extent (VHE), 4 = High Extent (HE), 3 = Moderate Extent (ME), 2 = Low Extent (LE), and 1 = Very Low Extent (VLE).

Job Security Questionnaire (JSQ) Subscale

The self-designed Job security Questionnaire (JSQ) of seven items was used to measure job security. The scale has a Likert rating comprising 1 = Strongly Disagree (SD), 2 = Disagree (D), and 3 = Agree (A), and 4 = Strongly Agree (SA).

Validity and Reliability of the Instruments

The instruments were subjected to face and content validity. The items were presented in a straightforward and clear manner on the surface, using basic and unambiguous English language. The input from the educational measurement and evaluation expert was explored with respect to content validity. Twenty-five (25) SAME staff from Lagos State were given the questionnaire to test its reliability. The Cronbach

Alpha reliability produced 0.86 and 0.87 for innovative work behavior and job security subscales, respectively.

Methods of Data Administration and Analyses

The researchers, two trained research assistants and staff members of the agency used in each of the sampled states involved in the administration of the questionnaire. The Key Informant Interviews (KIIs) sessions were conducted by one of the researchers. The data collected via questionnaire were analyzed using Analysis of Variance (ANOVA). The responses from the sessions of the Key Informant Interviews (KIIs) were content analyzed.

Ethical Considerations

The University of Ibadan Social Sciences Ethics Committee gave its approval with the assigned number UI/SSHREC/2023/0144. This study adhered to anonymity, confidentiality and voluntary participation. There was no room for inducement before, during and after their participation in the research.

Results

Research Question 1: What is the level of job security maintained by SAME employees in Southwestern, Nigeria?

Table 1: presents the level job security maintained among same employees in southwest, Nigeria.

Descriptive Statistics	N	Mean ($\bar{x}$)	St. Deviation
Interpretation/Decision			
Job Security	201	2.22	0.73
Low			

Interpretation and Discussion

The findings revealed that the employees of the SAME maintained low degree of job security ($\bar{x}= 2.22$) at the agency level. This would make them feel anxious, stressed, or demotivated, thereby leading to decreased productivity, absenteeism, or turnover. However, these employees cannot be disengaged unexpectedly from their employer without committing a punishable offense. But they could be nursing a mindset of switching from their current workplace to another which they feel is better than SAME.

This is to say that insecurity can undermine intrinsic motivation, limit creativity-relevant processes, and hinder domain-relevant skills development. Feeling unstable or threatened can lead to stress, anxiety,

and decreased creative thinking, ultimately impacting employee innovation and performance. Job insecurity can stifle employees' willingness to take risks, experiment, and generate novel ideas.

In agreement, Lee and Whitford (2022) found that tenured government employees experienced low job security due to political polarization, budget cuts, and changes in leadership. Despite having tenure, these employees felt uncertain about their job stability which highlighting the impact of external factors on their feeling of job security. Zhu (2023) submitted that low job security can hinder employees' personal and professional planning, reducing their investment in work and opportunities for growth and development. Baldwin and Chronister (2022) similarly discovered that tenured faculty members faced increased job insecurity due to budget cuts, changes in leadership, and shifts in institutional priorities. This suggests that tenure may not be the guarantee of job security it once was and that academic employees are also vulnerable to external factors affecting their job stability. An informant r strengthened the essence of job security among employees by reiterating that: job security can significantly boost IWB by fostering creativity among employees which in turn would promote growth and competitiveness. It fosters trust and collaboration among employees as well as enables them to share ideas and work together to solve problems.

(KII/Ekiti/Executive Secretary/Female/2023).

Research Question 2: What are the differences in SAME employees' IWB on the basis of job tenure, and educational qualifications in Southwestern, Nigeria?

Table 2a: Difference in SAME Employees' IWB on the Basis of Educational Qualifications

Sum of Squares	df	Mean Square	F	Sig
Between Groups 2.542	1271.377	2	635.688	0.081
Within Groups	49514.842	198	250.075	
Total	50786.219	200		

Table 2b: Difference in SAME Employees' IWB on the Basis of Job Tenure

Sum of Square	df	Mean	Square
F	Sig		

Between Groups	4943.249	3	1647.750	7.081
0.000*				
Within Groups	45842.969	197	232.705	
Total	50786.219	200		

Table 2c: Results of Post Hoc Comparisons Dunnett T3 on Age and Job Tenure

IWB		Mean Difference (I-J)		S. E	Sig.
95% Confidence Interval					
Job Tenure					Lower Bound Upper Bound
4.95	20.76	6-10 Yrs.	12.856*	3.393	.001
1-5 Yrs.	11-15Yrs.	15.023*	3.565	.000	
6.72	23.33	16 Yrs. and Above	13.646*	3.393	.000
5.74					

The results in table 2a revealed that the IWB of the SAME personnel did not vary statistically significantly based on their educational background ($F_{2, 198} = 2.542$; $p_{0.081} > 0.05$). The probability value of .05. was less than the sig. value of 0.081. This means that IWB among SAME employees did not differ significantly on the basis of the educational qualifications of the employees under investigation. The findings indicated that a greater level of education does not always translate into a noticeably higher IWB among workers. Thus, IWB may be more significantly influenced by other variables

Sari and Adi (2021) reported no significant difference in educational level and employees' IWB during the global pandemic which was in tandem with the findings of this research work. This study's findings are in line with those of Leong and Rasli (2014), who suggested that workers' IWB may not be impacted by their educational attainment. On the contrary, Bekele and Singh (2022) reported that an employee's educational background significantly influences how innovatively they perform in Ethiopian institutes of research.

An informant concurred that *Higher levels of education can only provide a foundation for critical thinking and problem-solving but may not guarantee IWB (KII/Ekiti/Executive Secretary/Female/2023).*

Another informant expressed the premium his agency placed on the relevancy of the educational certificate by stating:

- As far as our appointment of employees into the Adult and Mass Literacy Officers (AMLOS) is concerned, the premium is in most cases placed on those who possess adult-education-oriented qualifications regardless of sex. This is working perfectly for the agency to always monitor, evaluate and implement the agency's policies and programmes **(KII/Oyo/Director/Male/ 2023).**
- In the same vein, an informant stated that educational background influences a person's belief in their creativity and innovation capacity. Possessing the required credentials can inspire intrinsic motivation and encourage novel initiative. Ensuring qualifications fit the position's demands can encourage IWB by providing workers with autonomy, drive, and accountability **(IDI/Ondo/Director/Male/2023).**

Table 2b indicated a statistically significant difference in the SAME employees' IWB on the basis of their job tenure $F(3, 197) = 7.081$ ($p < 0.000 < 0.05$). This is because sig. value of 0.000 was lesser than the probability value of .05. This, according to post-hoc results of table 2c, indicated that SAME employees' IWB differed in favor of those who had spent 6 years and above compared with their counterparts that did not. This suggested that there is a critical threshold of job tenure (6 years) beyond which employees' IWB tends to improve. Employees with longer tenure may have developed a stronger sense of commitment, loyalty and engagement with the agency leading to more favorable IWB.

Huang and Hsieh (2020) and Bekele and Singh (2022) have shown that longer employment length is associated with improved work behavior, including organizational citizenship behavior, job satisfaction, employee engagement, and organizational commitment. They corroborated the finding that workers who have been on the job for six years or longer typically have better IWB than those who have worked there for less time.

An informant corroborated that experience is considered the best teacher, and an employee's years of service significantly influence their ability to complete agency-level assignments, as they learn and improve the fundamentals of the agency's activities **(KII/Ogun/Director/ Female/2023).**

This study suggests a nexus between employees' job tenure and creativity, as longer tenure can enhance domain-relevant skills and expertise. Experienced employees may possess deeper knowledge, enabling more innovative solutions. However, tenure can also lead to complacency or rigid thinking, potentially stifling creativity.

Conclusion

Employees maintained low orientation towards job security. A greater level of education does not s translate into a noticeably higher IWB among workers. SAME employees' IWB differed on the basis of job tenure but in favor of those who had spent 6 years and above compared with their counterparts that did not.

Recommendations

Based on the findings of this study, the following recommendations are raised.

- (i) On the basis of educational qualifications, SAME heads should establish a clear innovation framework, outlining goals, expectations, and resources available to support innovative tasks. This framework should be communicated across all levels and departments regardless of educational qualifications. They should establish partnerships with external organisations, such as educational institutions or private firms to access new ideas, technologies, and expertise. This would provide employees with opportunities to learn from others and bring new perspectives back to their work.
- (ii) For SAME employees to leverage job security, they must focus on building a strong foundation of trust and stability in their role, prioritise responsibilities, meet deadlines, and consistently deliver high-quality work to demonstrate their value to the organisation. In addition to feeling free to express their creative ideas with no fear of reprisal or losing their job, they should research the permanence and security that come with having a profession.
- (iii) Government and another concerned stakeholder should prioritise job security by providing employees with a sense of stability and permanence. They should introduce programmes that prioritise employee retention, recognising that high turnover rates can negatively impact innovation and creativity. Creating

opportunities for professional development, providing competitive compensation and benefits, and fostering a positive and supportive work environment are some strategies to do this.

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ADAPTIVE PARENTING STRATEGIES IN A TECHNOLOGICAL WORLD: EFFECTS OF A SIX-WEEK EXPERIENTIAL AND NON-FORMAL EDUCATION PROGRAM IN ARAD COUNTY (ROMANIA)

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Abstract: *Contemporary parenting increasingly requires adaptive strategies to address technological, social, and emotional challenges affecting family life. This study investigated the outcomes of a six-week non-formal education program that integrated outdoor experiential learning activities with multimedia-based workshops, implemented in Arad County, Romania. A pre-post mixed-methods design was employed. Forty parents participated in the program and completed the Parenting Sense of Competence Scale (PSOC) and the Parent-Child Relationship Inventory (PCRI) before and after the intervention. Paired-samples analyses indicated statistically significant post-intervention improvements in parenting efficacy and satisfaction, as well as in key dimensions of the parent-child relationship, including communication, emotional support, and limit setting ($p < .05$). In addition, qualitative data obtained through semi-structured interviews suggested perceived improvements in parental confidence, emotional regulation, and family interaction. Although the absence of a control group limits causal inference, the findings indicate positive within-participant changes following program participation. The study highlights the potential contribution of integrated experiential and multimedia approaches within non-formal parenting education programs aimed at supporting adaptive parenting in contemporary contexts.*

Keywords: *adaptive parenting; non-formal education; experiential learning; multimedia strategies; parental resilience; family dynamics.*

Introduction

In a rapidly evolving technological society, the traditional models of parenting face unprecedented challenges. Adaptive parenting strategies have become crucial for maintaining emotional stability, resilience, and strong parent-child relationships (Parker, 2020). The capacity of families to adjust to dynamic social and technological changes directly influences children's psychological development and overall family well-being (Coyne et al., 2021).

Non-formal and experiential educational practices, such as outdoor learning activities and multimedia-based interventions, offer innovative pathways for strengthening parental resilience and adaptability (Beames, Higgins, & Nicol, 2012; Livingstone & Blum-Ross, 2020). Through such experiences, parents and children are encouraged to co-create knowledge, solve problems collaboratively, and develop emotional regulation skills essential in today's world (Waite, 2017).

The concept of adaptive parenting emphasizes flexible, responsive, and context-sensitive approaches to child-rearing (Skinner & Edge, 2021). This is particularly relevant in the face of technological immersion, which redefines family interactions and demands new forms of parental engagement and supervision (Uhls, 2017). The integration of non-formal education and multimedia strategies in parenting interventions is thus an emerging research frontier with significant implications for educational policy and family support systems. (Pânișoară, 2013; Bocoș, 2013)

This study aims to explore the impact of experiential and non-formal education programs on the development of adaptive parenting practices among families in Arad County, Romania. By examining both outdoor educational experiences and the use of multimedia tools, we seek to identify effective strategies for enhancing family resilience in a technological world.

Building on existing literature regarding adaptive parenting, experiential learning, and non-formal education, the present study aimed to examine changes in parental perceptions following participation in a six-week outdoor and multimedia-based parenting program. Specifically, the study addressed the following hypotheses:

H1: Parents will report significantly higher levels of parenting efficacy and satisfaction, as measured by the Parenting Sense of Competence Scale (PSOC), following program participation compared to pre-intervention levels.

H2: Parents will report significant post-intervention improvements in the quality of the parent–child relationship, particularly in communication, emotional support, and limit setting, as measured by the Parent–Child Relationship Inventory (PCRI).

In addition, qualitative data were collected to explore participants' subjective experiences of the program and to provide contextual understanding of perceived changes in parenting practices and family interactions.

Literature review

Adaptive parenting has emerged as a crucial framework in addressing the dynamic demands faced by modern families. According to Masten and Barnes (2018), adaptive parenting involves the ability to modify caregiving behaviors based on children's developmental needs and environmental changes. This flexible parenting style has been shown to promote resilience, emotional regulation, and social competence in children. (Pânișoară & Pânișoară, 2019)

Non-formal education offers a unique avenue for fostering these adaptive skills. Outdoor education programs, in particular, have been associated with increased problem-solving abilities, self-efficacy, and emotional well-being among both children and their parents (Becker et al., 2017; Gill, 2014). These educational experiences differ from traditional classroom instruction by emphasizing experiential learning, autonomy, and cooperative engagement with the environment.

Multimedia strategies are also gaining prominence in contemporary parenting interventions. As argued by Livingstone and Blum-Ross (2020), the integration of digital tools such as video storytelling, virtual simulations, and mobile applications can support parents in promoting adaptive behaviors and emotional understanding in children. However, Coyne et al. (2021) caution that parental mediation is crucial to ensuring that technology use supports, rather than hinders, developmental outcomes.

Outdoor education combined with multimedia approaches provides a hybrid model of experiential learning that can be particularly effective in enhancing parental adaptability. Studies by Gray (2013) and Waite (2017) emphasize that shared outdoor experiences strengthen family bonds and improve communication skills, while multimedia tools can reinforce these experiences beyond physical activities.

Despite the growing interest in these interdisciplinary strategies, there remains a need for empirical studies that systematically evaluate their combined impact on adaptive parenting practices, particularly within diverse socio-economic and cultural contexts. Addressing this research gap, the present study focuses on families from Arad County,

Romania, examining how non-formal, outdoor, and multimedia interventions contribute to the development of resilience-oriented parenting.



Fig 1. Conceptual map linking non-formal education to adaptive parenting and family resilience

Based on the reviewed literature, a conceptual framework was developed to illustrate the hypothesized relationships among non-formal education, adaptive parenting, and family resilience (Figure 1).

Methodology

Research design

This study employed a mixed-methods research design, integrating quantitative and qualitative approaches to comprehensively explore the impact of experiential outdoor education and multimedia-based strategies on adaptive parenting practices. Quantitative data were collected through standardized surveys administered before and after the intervention, while qualitative insights were gathered via semi-structured interviews. The combination of both methods allowed for a deeper understanding of the mechanisms through which non-formal education supports parenting adaptability (Creswell & Plano Clark, 2017).

Participants

The study included 40 families from Arad County, Romania, recruited through purposive sampling. Eligibility criteria required families to have at least one child aged between 6 and 14 years and to express willingness to participate in a six-week program involving outdoor experiential activities and multimedia-based educational sessions. For the purposes of quantitative analysis, one parent from each family completed the research instruments.

The participating families represented both urban and rural areas and varied in socio-economic background. Participation was voluntary, and parents were informed about the aims and procedures of the study prior to enrollment. All participants provided informed consent before taking part in the research.

Intervention Description

The intervention consisted of a six-week non-formal education program designed to support adaptive parenting through a combination of outdoor experiential learning activities and multimedia-based workshops. The program targeted both parents and children and was implemented in Arad County, Romania.

Each weekly session integrated two complementary components. The outdoor experiential component involved cooperative activities aimed at promoting communication, emotional awareness, problem-solving, and collaborative decision-making within the family context. These activities encouraged direct parent–child interaction and reflection on parenting behaviors in real-life situations. The multimedia-based component focused on guided discussions, video materials, and digital resources addressing contemporary parenting challenges, including emotional regulation, constructive communication, and the management of children’s interaction with technology.

Sessions followed a structured sequence that included activity engagement, guided reflection, and group discussion, allowing participants to connect experiential learning with everyday parenting practices. The program emphasized active participation, reflection, and shared learning rather than didactic instruction. Participation across sessions was consistent with the non-formal education framework, which prioritizes flexibility, learner engagement, and experiential meaning-making.

Instruments

Quantitative data were collected using two validated instruments:

- The Parenting Sense of Competence Scale (PSOC) (Gibaud-Wallston & Wandersman, 1978; Johnston & Mash, 1989),

which measures parents' perceived competence and satisfaction in their parenting role. The scale has been widely used to assess parental self-efficacy and emotional functioning.

- The Parent-Child Relationship Inventory (PCRI) (Gerard, 1994), which evaluates multiple dimensions of the parent-child relationship, including communication, emotional support, involvement, and limit setting.

Qualitative data were collected through semi-structured interviews based on a thematic guide focusing on perceived changes in parental strategies, emotional regulation, and family dynamics following participation in the intervention program.

Data Analysis

Quantitative data were analyzed using a pre-post within-subjects approach. Paired-samples *t*-tests were conducted to examine differences between pre-intervention and post-intervention scores on the Parenting Sense of Competence Scale (PSOC) and selected subscales of the Parent-Child Relationship Inventory (PCRI). Statistical significance was evaluated using an alpha level of .05.

In addition, Pearson correlation analyses were performed on post-intervention scores to explore associations between parenting sense of competence and parent-child relationship dimensions. These analyses were intended to examine the relationships among study variables following program participation rather than to establish causal effects.

Qualitative data were analyzed using a thematic approach, following the principles outlined by Braun and Clarke (2006). Qualitative interview data were examined to support interpretation of the quantitative findings and to provide contextual insight into participants' experiences. The qualitative analysis focused on identifying recurring patterns related to perceived changes in parenting practices and family interactions.

Procedure and Ethical Considerations

Data collection followed a pre-post intervention design. Parents completed the Parenting Sense of Competence Scale (PSOC) and the Parent-Child Relationship Inventory (PCRI) prior to the start of the program and again at its conclusion. The same parent from each participating family completed both assessments. In addition to quantitative measures, semi-structured interviews were conducted with participating parents following the completion of the program to gather qualitative insights into their experiences and perceived changes in parenting practices and family interactions.

Participation in the study was voluntary. Parents were informed about the objectives of the research, the structure of the program, and the use of collected data for research purposes. Informed consent was obtained from all participants prior to data collection. Participants were assured of the confidentiality and anonymity of their responses, and data were analyzed and reported in aggregated form.

Results

To examine changes in parents perceived competence following participation in the program, paired-samples *t*-tests were conducted on pre-intervention and post-intervention scores of the Parenting Sense of Competence Scale (PSOC). As shown in Table 1, parents reported significantly higher levels of parenting efficacy and parenting satisfaction at post-intervention compared to pre-intervention ($p < .05$). Paired-samples *t*-tests were also conducted to assess pre-intervention and post-intervention differences on selected subscales of the Parent–Child Relationship Inventory (PCRI). Results indicated statistically significant post-intervention differences in parent–child communication, emotional support, and limit setting ($p < .05$). Descriptive statistics and test values are presented in Table 1.

Measure	Pre- Intervention Mean (SD)	Post- Intervention Mean (SD)	t	p
Parenting Efficacy (PSOC)	3.1 (0.5)	3.7 (0.4)	6.42	< .001
Parenting Satisfaction (PSOC)	3.0 (0.6)	3.5 (0.5)	5.89	< .001
Communication (PCRI)	3.2 (0.5)	3.8 (0.4)	6.10	< .001
Emotional Support (PCRI)	3.1 (0.6)	3.6 (0.5)	5.67	< .001
Limit Setting (PCRI)	2.9 (0.7)	3.4 (0.6)	5.05	< .001

Table 1. Descriptive statistics for pre- and post-intervention scores on PSOC and PCRI

Pearson correlation analyses were conducted using post-intervention scores to explore associations between parenting sense of competence and parent–child relationship dimensions. Higher levels of parenting efficacy and satisfaction were positively associated with parent–child

communication, emotional support, and limit setting. Correlation coefficients are presented in Table 2. (N=40)

Variables	Communication	Emotional Support	Limit Setting	p-value
Parenting Efficacy	.62	.58	.55	< .001
Parenting Satisfaction	.59	.63	.52	< .001

Table 2. Correlations between parenting competence and parent-child relationship dimensions post-intervention

Discussion

The present study examined changes in parental perceptions following participation in a six-week non-formal education program integrating outdoor experiential activities and multimedia-based workshops. Overall, the findings indicate positive within-participant changes in parenting sense of competence and perceived parent-child relationship quality following program participation. These results are consistent with the study's hypotheses and support the relevance of experiential and reflective approaches within adaptive parenting education.

In relation to the first hypothesis, parents reported higher levels of parenting efficacy and satisfaction after completing the program. This finding aligns with previous research suggesting that experiential learning and reflective group-based activities can enhance parental confidence by providing opportunities for active engagement, feedback, and shared problem-solving. The combination of outdoor activities and guided multimedia discussions may have contributed to parents' increased awareness of their parenting strategies and emotional responses in everyday interactions with their children. (Beames, Higgins, & Nicol, 2012; Gill, 2014).

Regarding the second hypothesis, post-intervention improvements were observed in key dimensions of the parent-child relationship, including communication, emotional support, and limit setting. These findings suggest that structured opportunities for joint parent-child activities, coupled with guided reflection, may facilitate more constructive interaction patterns within the family. The experiential nature of the program allowed parents to practice communication and boundary-setting skills in context, potentially reinforcing their application beyond the program setting. (Gray, 2013; Waite, 2017).

The observed associations between parenting sense of competence and parent-child relationship dimensions further underscore the interconnected nature of parental self-perceptions and family interaction quality. Parents who reported higher levels of efficacy and

satisfaction also tended to perceive more positive relationships with their children, highlighting the importance of addressing parental confidence within parenting education initiatives.

Analysis of post-intervention interviews revealed several recurring themes related to parents' experiences in the program. Parents described increased awareness of their parenting behaviors, improved emotional regulation during interactions with their children, and enhanced communication within the family. Participants also emphasized the value of experiential outdoor activities in facilitating reflection and joint problem-solving, as well as the usefulness of multimedia resources in addressing contemporary parenting challenges.

From a practical perspective, the results suggest that non-formal education programs integrating experiential outdoor learning and multimedia resources may represent a valuable approach for supporting adaptive parenting in contemporary contexts. Such programs may be particularly relevant in addressing challenges associated with technological change, emotional regulation, and family communication. The flexible and participatory structure of non-formal education allows for contextual adaptation to diverse family needs, including those in both urban and rural settings.

Future research should address these limitations by employing controlled or randomized designs, larger and more diverse samples, and longitudinal follow-up to assess the durability of observed changes. Further investigation into specific program components, such as the relative contribution of outdoor experiential activities versus multimedia-based elements, would also enhance understanding of effective mechanisms in adaptive parenting interventions.

Furthermore, the multimedia-based components of the intervention provided an innovative extension of the learning process. As supported by Livingstone and Blum-Ross (2020), integrating technology in a structured and reflective way can strengthen parental guidance skills, especially in a context where digital engagement is inevitable. Parents participating in this study reported greater confidence in managing technology use and promoting emotional regulation within their families, reinforcing the idea that digital tools, when properly mediated, can complement experiential education (Coyne et al., 2021).

An important theoretical implication is the demonstration that adaptive parenting is not merely a personal trait but a skillset that can be developed through structured educational programs. This supports the developmental perspective on resilience proposed by Masten and Barnes (2018), emphasizing that resilience-building in parenting requires environmental support and intentional interventions.

From a practical standpoint, the integration of outdoor and multimedia strategies into parenting programs offers a scalable and flexible model adaptable to various socio-cultural contexts. Educational policies aiming to strengthen family resilience in the digital age should consider embedding such non-formal approaches into broader support frameworks.

Several limitations of the present study should be acknowledged. First, the absence of a control group limits the ability to draw causal conclusions, as observed changes cannot be attributed exclusively to the intervention. Second, the reliance on self-report measures may have introduced response bias, including social desirability effects. Third, the relatively small sample size and the geographical focus on Arad County, Romania, restrict the generalizability of the findings. In addition, psychometric properties of the instruments within the present sample were not examined in detail.

Future research should address these limitations by employing controlled or randomized designs, larger and more diverse samples, and longitudinal follow-up to assess the sustainability of observed changes. Further investigation into the relative contribution of outdoor experiential activities and multimedia-based components would also enhance understanding of effective mechanisms in adaptive parenting interventions.

Conclusion

This study examined changes in parental perceptions following participation in a six-week non-formal education program integrating outdoor experiential learning and multimedia-based workshops. The findings indicate positive within-participant changes in parenting sense of competence and perceived quality of the parent–child relationship, suggesting that such integrated approaches may support adaptive parenting in contemporary family contexts.

By combining experiential outdoor activities with reflective multimedia-based learning, the program provided opportunities for active engagement, shared reflection, and skill practice within real-life parenting situations. The results highlight the potential value of non-formal education frameworks in addressing parenting challenges related to communication, emotional regulation, and limit setting.

Despite methodological limitations, including the absence of a control group and reliance on self-report measures, the study contributes empirical evidence from a local Romanian context to the growing literature on adaptive parenting interventions. Future research employing controlled designs, larger samples, and longitudinal follow-

up is needed to further evaluate the effectiveness and sustainability of such programs.

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VIDEO INSTRUCTIONAL PACKAGES AND GENDER DIFFERENCE ON PUPILS' LEARNING OUTCOMES IN PRIMARY SCHOOLS' COMPUTER STUDIES IN ONDO STATE, NIGERIA

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Abstract: *The purpose of the study was to investigate the Video Instructional Package (VIP) and gender differences on pupils' academic achievement and attitude towards computer studies in public primary schools in Ondo State. The study explored gender differences in pupils' responses to a Video Instructional Package (VIP) used in the teaching of Computer Studies in selected primary schools in Ondo State, Nigeria. Using a quasi-experimental research design of the pretest-posttest control group type. The population of the study comprised all primary four pupils in Ondo State. The sample consisted of an intact class of 66 primary four pupils selected from schools using purposive sampling techniques based on the availability of a functional computer system for the treatment group, while another school was randomly selected for the control. Two research instruments were validated and employed for the study: the Pupils' Attitude Towards Computer Studies Questionnaire (PATCSQ) was validated using Cronbach's Alpha formula for the reliability, with $r = 0.78$. While the Computer Studies Achievement Test (CSAT) was validated using the test-retest method for reliability, with $r = 0.87$. These were adjudged to be reliable for the study. The experimental group received instruction using an adopted video instructional package, while the control group received instruction in a conventional method format. Two hypotheses were formulated, while inferential statistics such as ANOVA were used to test the hypotheses at the 0.05 level of significance. Findings showed that there was a significant difference in the academic achievement between male and female pupils exposed to the video instructional package and those exposed to the conventional method. The F-value*

is 10.77 for the instructional method, which is high, while the p-value (0.014) is a statistically significant p-value < 0.05. ($F = 10.77$, $P < 0.05$). The findings also showed that there was a significant difference in attitude between male and female pupils who were exposed to a video instructional package and those in the conventional method. The F-value is 14.47 for the instructional method, which is high, while the p-value is 0.016 with a statistically significant p-value < 0.05. ($F = 14.47$, $P < 0.05$). The study concluded that pupils' academic achievement was greatly enhanced with the use of the video instructional package compared to the conventional method, which consequently made pupils develop a positive attitude towards computer studies. The study therefore recommended the integration of the Video Instructional Package into primary school education to improve learning outcomes and attitudes to computer studies.

Keywords: *video instructional package; academic achievement; attitude; gender; primary school pupils.*

Introduction

Primary education is the foundation of formal learning. It comes after preschool and before secondary education. This stage equips learners with essential life skills. Suprpto et al., (2021) describe a child's mind as moldable. They emphasize the lasting impact of early education. A strong foundation is crucial. Poor early education can undermine future learning.

Computer studies is becoming increasingly important in Nigeria's primary schools. Campbell (2022) highlights its role in teaching pupils how to process and store information using computers. Although the subject is relatively new, its global relevance makes it essential in the curriculum (Godabe et al., 2022). Despite its importance, many schools still rely on chalkboards and traditional teaching methods. These methods are time-consuming and limit retention. They may also pose health risks. Teaching often involves passive learning with minimal interaction. Akingbemisilu and Babafemi (2018) argue that this approach reduces pupils' engagement and creativity.

Video Instructional Packages (VIPs) offer a promising solution. They support learning in cognitive, affective, and psychomotor domains. VIPs present complex ideas both visually and audibly. This makes content easier to understand. Nnoli and Onwudinjo (2023) highlight television's role in delivering rich content efficiently. Kilag et al.

(2023) stress that most learning occurs through sight and hearing. VIPs are effective for all pupils, regardless of gender. Gender, shaped by social norms, influences learning experiences. In Nigeria, boys and girls attend school together. However, stereotypes persist. Wallace et al., (2020) found that mixed-gender groups perform better than single-gender ones. Attitudes play a key role in learning outcomes. Positive attitudes boost achievement. Negative attitudes hinder progress. These attitudes stem from personality, experience, and environment. Starck et al., (2024) emphasizes that academic achievement reflects the depth of learning. It is also a key measure for evaluation.

Gender issues have remained central in the discourse on education, especially regarding achievement and participation in science and technology subjects. Most of the past research has indicated that boys perform better than girls in technical and computer-related subjects, and this disparity has been commonly linked to cultural stereotypes, gender socialization, and inequality in learning opportunities Lin, S. L., & Wong, G. K. W., (2024). In many African contexts, such as Nigeria, the socio-cultural expectations surrounding young males and females often influence the way boys and girls think about technology-based subjects. Boys are often predisposed to computers and problem-solving activities, while girls are at times encouraged toward less technical areas. This has raised growing concerns about fairness and equity in education.

Gender differences in attitudes toward computer studies are evident. Mathee (2023) & Tarchi et al., (2021) found that girls often show less interest and confidence in technology. Societal norms contribute to this gap. Snyder (2020) recommends role models and inclusive practices to address it.

Some studies suggest boys outperform girls. Others show minimal differences. Wrigley-Asante et al, (2023) argue that teaching methods matter more than gender. Equal conditions can lead to similar outcomes for both sexes. VIPs can improve achievement and attitudes in computer studies. This study explores how VIPs and gender differences affect learning outcomes. The focus is on selected primary schools in Ondo State, Nigeria.

Statement of the Problem

Gender differences in academic performance and attitude are common topics in educational research. Observations and records show that these differences are especially noticeable in science and technology subjects. In many cases, male pupils are believed to perform better and show more interest in technology-based learning than females. These beliefs often lead to stereotypes. Such stereotypes can reduce girls'

confidence and participation in subjects like computer studies. With the introduction of Video Instructional Packages (VIPs), it is important to examine whether these gender gaps still exist. Do male and female pupils benefit equally from video instruction? Or do differences in achievement and attitude remain? Answering these questions is essential for promoting gender equity in education.

This study aims to investigate the impact of VIPs and gender differences on pupils' learning outcomes in computer studies. The focus is on selected primary schools in Ondo State, Nigeria.

Purpose of the Study

This study aims to examine how Video Instructional Packages (VIPs) and gender differences affect pupils' learning outcomes in computer studies. The focus is on primary schools in Ondo State, Nigeria.

Specific Objectives

1. To assess the impact of VIPs on the academic achievement of male and female pupils in computer studies.
2. To evaluate the effect of VIPs on the attitudes of male and female pupils toward computer studies.

Research Hypotheses

The following hypotheses were formulated to guide the study:

Ho1: There is no significant difference in the academic achievement of male and female pupils exposed to the video instructional package and those exposed to the conventional method.

Ho2: There is no significant difference in the attitude of male and female pupils exposed to the video instructional package and those exposed to the conventional method.

Research Method

Research Design

This study adopted a quasi-experimental design. It involved a pretest-post-test control group. After the treatment, a post-test was conducted to measure pupils' attitudes and academic achievement in computer studies. The design focused on gender differences in learning outcomes. This approach was chosen to explore cause-and-effect relationships between groups. Specifically, it examined how video instructional packages and gender differences influence pupils' performance and attitudes in computer studies.

Population of the Study

The population for this study comprised all Primary Four pupils in Ondo State. According to the State Universal Basic Education Board (SUBEB, 2024), the total number of pupils at this level was 73,217.

Sample and Sampling Techniques

The sample for this study consisted of 66 Primary Four pupils. This included 24 males and 42 females. A multistage sampling technique was used. It combined simple random and purposive sampling methods. One school was purposively selected from a local government area. This was based on the availability of a functional computer system and projector for the treatment group. Another school was randomly selected from a different local government area to serve as the control group. Primary Four pupils were chosen because the instructional content was relevant to their curriculum. An intact class was used for both the experimental and control groups.

Research Instruments

This study used both treatment and test instruments. The treatment instrument was the Video Instructional Package (VIP). Two test instruments were also used:

1. Computer Studies Achievement Test (CSAT)—to assess pupils' academic performance.
2. Pupils' Attitude Towards Computer Studies Questionnaire (PATCSQ), to measure their attitudes toward the subject.

Validity of the Instruments

The instruments were reviewed by two experts. One was from the field of Information Technology (IT), and the other specialized in Test and Measurement. After expert evaluation, the instruments were submitted to the researcher's supervisor for final scrutiny. They were then approved and used for data collection.

Reliability of the Instrument

The reliability of the Computer Studies Achievement Test (CSAT) was established using the Kuder-Richardson Formula 20 (KR-20). For the Pupils' Attitude Towards Computer Studies Questionnaire (PATCSQ), Cronbach's alpha was used. These analyses were based on data collected during pilot testing. The reliability coefficient for PATCSQ was 0.78. For CSAT, it was 0.87. These values indicate that both instruments were considered reliable for the study.

Administration of the Instrument

Pretest Stage

All pupils in both the control and experimental groups took a pretest. The pretest included the questionnaire and the Computer Studies Achievement Test (CSAT). It was used to collect baseline data on pupils' attitudes and academic performance. The test was conducted in a controlled environment. Standard procedures were followed to ensure consistency. The pretest lasted for one week.

Treatment Stage

Experimental Group

The intact class was exposed to VIP using a laptop connected to an LCD projector. The school computer teacher introduced the lesson before the video presentation, and pupils were encouraged to listen and write down notes. After the video presentation, the pupils were evaluated according to the video, and conclusions were followed.

Control group

The school computer teacher used the conventional method to teach the subject in the control group, that is exposing the subjects to lesson content through verbal instruction alone. During the teaching process, important points which the study subject covers were expected to be written down in their exercise books while the teacher writes on the chalkboard for the pupils to copy.

Post-test Stage

At the end of the treatment stage, the questionnaire and CSAT were re-administered to the pupils to determine the effects of the treatment on them. The CSAT used during the pretest was rearranged, and it was administered to the experimental and control groups to measure changes in achievement and attitude.

Data Analysis

The data collected through the instruments were analysed using inferential statistics. (ANOVA)

Results and Analysis

The result of the analysis of data of the pretest and post-test from the control and experimental groups is presented and discussed in this chapter. The presentation and discussion were based on the hypotheses formulated for the study.

Results

Hypothesis Testing

Hypothesis one

There is no significant difference in the academic achievement of male and female pupils exposed to the video instructional package and those exposed to the conventional method.

Analysis of Variance (ANOVA) was employed to test the hypothesis in order to determine if there is a significant difference in the pretest and post-test academic means scores of pupils exposed to video instructional package instruction

Table 1: ANOVA result of the academic achievement of male and female pupils exposed to video instructional package and those exposed to conventional method

Source of Variation	Sum of Square	Df	Mean Square	F	Sig. Value
Gender	0.3721	1	0.3721	0.026	0.898
Instructional Methods	25.4016	1	25.4016	10.77	0.014
Error	14.2884	63			
Total	40.0621	65			

Table 1 shows that the F-value for gender is 0.026. This indicates very little variation in academic achievement between male and female pupils. The p-value is 0.898, which is greater than the 0.05 significance level. Therefore, the difference in achievement based on gender is not statistically significant. In contrast, the F-value for instructional method is 10.77. The p-value is 0.014, which is less than 0.05. This means the difference in achievement between pupils taught with the video instructional package and those taught with the conventional method is statistically significant. As a result, the null hypothesis is rejected. The analysis confirms that instructional method significantly affects academic achievement, while gender does not.

Hypothesis two

There is no significant difference in the attitude of male and female pupils exposed to the video instructional package and those exposed to the conventional method.

Analysis of Variance (ANOVA) was employed to test the hypothesis to determine if there is a significant difference in the attitude of male

and female pupils exposed to the video instructional package and those exposed to the conventional method.

Table 2: ANOVA result of the attitude of male and female pupils exposed to video instructional package and those exposed to conventional method

Source of Variation	Sum of Square	Df	Mean Square	F	Sig. Value
Gender	0.0841	1	0.0841	0.500	0.608
Groups	2.4336	1	2.4336	14.477	0.016
Error	0.1681	63	0.1681		
Total	40.0621	65			

Table 2 shows that the F-value for gender is 0.500. This indicates little variation in pupils' attitudes based on gender. The p-value is 0.608, which is greater than the 0.05 significance level. This means the difference in attitude between male and female pupils is not statistically significant.

However, the F-value for instructional method is 14.477. The p-value is 0.016, which is less than 0.05. This shows a statistically significant difference in attitude between pupils taught with the video instructional package and those taught with the conventional method.

Therefore, the null hypothesis is rejected. The result confirms that instructional method significantly affects pupils' attitudes, while gender does not.

Discussion of Findings

Discussion of Findings

This study aimed to determine whether the use of Video Instructional Packages (VIPs) in teaching computer studies would have different effects on male and female pupils in primary schools.

Academic Achievement (Hypothesis 1)

Table 1 shows that the ANOVA result for instructional method was significant. The F-value was 10.77, and the p-value was 0.014, which is less than 0.05. This indicates a statistically significant difference in academic achievement between pupils taught with VIP and those taught using conventional methods. Before the intervention, there was no significant difference in mean scores between male and female

pupils. After the intervention, both groups showed improvement. However, the instructional method had a greater impact than gender. This suggests that VIPs were effective for both boys and girls in improving academic performance. These findings align with Kilag (2023), who reported that gender differences in academic performance are minimal when other factors are controlled. Similarly, the findings also support Noetel et al. (2021), who found that multimedia instruction improved understanding and retention for both male and female students in science subjects.

Attitude Towards Computer Studies (Hypothesis 2)

Table 2 shows that the ANOVA result for instructional method was also significant. The F-value was 14.47, and the p-value was 0.016, which is below the 0.05 threshold. This confirms a significant difference in pupils' attitudes between the VIP and conventional method groups. Initially, male pupils had slightly higher attitude scores than females. After the intervention, both groups showed marked improvement. This highlights the positive impact of VIPs on pupils' attitudes, regardless of gender.

The initial difference in attitude reflects existing gender stereotypes. However, the use of VIPs helped bridge this gap. The results support the rejection of the null hypothesis, confirming that instructional method significantly influences pupils' attitudes.

VIPs enhance learning by making it more engaging and interactive. The findings are in agreement with Mayer (2021), who explained that multimedia learning through visual and auditory channels improves understanding and motivation. The finding also supports Moreno and Mayer (2007), who found that such environments increase student interest and foster positive attitudes.

Conclusion

The study concluded that Video Instructional Packages (VIPs) are gender-inclusive tools. They create equal learning opportunities for all pupils. Male and female learners showed similar outcomes when taught with VIPs. This suggests that multimedia instruction reduces the impact of stereotypes and teacher bias. These findings align with Kilag (2023), who found minimal gender differences in achievement when other factors were controlled. They also support Mayer (2021), who explained that multimedia learning improves engagement and understanding.

VIPs not only enhance academic performance but also promote positive attitudes. These findings align with Moreno and Mayer (2007), who found that multimedia environments increase motivation and

interest. In summary, VIPs are effective for improving learning outcomes and fostering equity. They are valuable tools for advancing digital literacy and inclusive education in Nigerian primary schools.

Recommendations

Based on the findings of the study, several recommendations are proposed to enhance equitable learning outcomes in computer studies. Firstly, it is recommended that teachers adopt Video Instructional Packages (VIPs) as a standard instructional tool. The use of VIPs has demonstrated potential in promoting inclusive learning experiences and encouraging active participation among both male and female pupils. To support this integration, continuous professional development should be provided to teachers. Such training programs should focus on building educators' competencies in designing, adapting, and effectively utilizing multimedia resources within the classroom setting. Furthermore, policymakers should consider incorporating multimedia instruction into the National Policy on Education. This policy shift would help foster equitable learning environments, with particular attention given to the fair distribution of educational resources across schools, regardless of their gender composition. In addition, curriculum planners are encouraged to integrate multimedia resources, such as VIPs, into lesson plans, textbooks, and teaching guides. This integration will ensure that instructional content aligns with the principles of inclusive education and reflects contemporary pedagogical practices.

Government bodies and educational stakeholders should also leverage multimedia instruction as a strategic tool to increase female participation in computer studies and related STEM fields. This initiative is crucial for addressing persistent gender disparities in STEM education. Lastly, future research should investigate the long-term impacts of VIPs on gender inclusivity in education. Further studies could also extend to other subjects and regions and explore the role of pupils' self-efficacy and digital confidence as mediating variables in gender-related learning outcomes.

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INVESTIGATING THE RELATIONSHIP BETWEEN SCIENCE SELF-EFFICACY AND PHYSICS ACHIEVEMENT AMONG SECONDARY SCHOOL STUDENTS IN DELTA STATE

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Abstract: *This study investigated the relationship between science self-efficacy and physics achievement among secondary school students in Delta State, Nigeria. A quantitative analytic correlational survey design was employed with a sample of 176 students from 12 schools. Data were collected using the Physics Self-Efficacy Questionnaire (PSE-Q), a Physics Achievement Test (PAT), and a Questionnaire on Instructional Practices and Environmental Factors (QIPEF). Results revealed a non-significant relationship between self-efficacy and achievement ($r = .046$, $p > .05$), challenging Social Cognitive Theory predictions in this context. However, teacher-centered instructional practices and environmental/psychological factors significantly predicted self-efficacy ($R^2 = .284$ and $R^2 = .522$ respectively), suggesting that self-efficacy is highly malleable and responsive to contextual improvements. No significant sex differences in self-efficacy were observed. The findings indicate a 'confidence-competence' paradox wherein students possess adequate self-efficacy that is not translated into academic performance, highlighting the critical role of instructional and environmental interventions. Implications for physics education policy and practice are discussed.*

Keywords: *science self-efficacy; physics achievement; secondary school; teacher-centered instruction; instructional practices.*

Introduction

The attainment of sustainable technological advancement and economic prosperity in the twenty-first century has necessitated unprecedented emphasis on achieving excellence in Science, Technology, Engineering, and Mathematics (STEM) education across

the globe. International policy frameworks, particularly those advanced by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Organisation for Economic Co-operation and Development (OECD), have consistently established that a nation's competitive advantage and economic resilience are inextricably linked to both the quality and quantity of STEM graduates it produces (Potvin & Hasni, 2014; Martin et al., 2016). Within this multidisciplinary scientific framework, physics assumes a foundational role, providing the essential conceptual and mathematical architecture required to interpret natural phenomena across scales ranging from quantum mechanics to astrophysics (Bao & Kathleen, 2019). Furthermore, physics education serves as a critical determinant of workforce preparedness in an increasingly technology-driven global economy, underpinning professional competencies in engineering, medicine, and applied sciences (National Research Council, 2012). The practical applications of physics are foundational to contemporary technological infrastructure, including renewable energy systems, advanced telecommunications, medical imaging technologies, and aerospace engineering innovations (Hofstein & Mamlok-Naaman, 2007).

Nigeria, as a developing nation with significant strategic aspirations toward industrialization and technological self-reliance, has explicitly positioned physics as a cornerstone subject within the senior secondary school curriculum. The National Policy on Education (Federal Republic of Nigeria, 2013) mandates physics as a compulsory subject for students pursuing science-related careers, directly aligning with the country's Vision 2030 agenda, which emphasizes technological advancement and sustainable economic development. However, despite this policy commitment, Nigerian secondary school students continue to demonstrate persistently poor performance in physics, presenting a substantial challenge to the nation's educational objectives.

Longitudinal examination of examination records from the West African Examinations Council (WAEC) and the National Examinations Council (NECO) spanning 2015 to 2024 reveal a troubling pattern of chronic underachievement. Ogunleye (2019) documented that physics consistently ranks among the subjects with the highest failure rates nationally, with pass rates at the credit level frequently falling below 40%, substantially undermining access to tertiary STEM programs. Within Delta State specifically located in Nigeria's South-South geopolitical zone, this trend has intensified. Ouworior and Ajaja (2024) reported that average physics performance in the state declined by 12 percentage points between 2015 and 2023,

with female students exhibiting disproportionately lower achievement levels. Furthermore, Akinsolu (2010) found that merely 14% of secondary schools in southwestern Nigeria produced candidates meeting the fundamental requirement of five credits for university admission, while Adesoji (2008) documented that fewer than 30% of physics candidates achieved grades sufficient for entry into science and engineering programs.

These patterns extend beyond individual student outcomes to systemic constraints. Many Nigerian universities report that fewer than 20% of admitted students possess adequate foundational knowledge in physics, creating a critical skills gap that constrains the nation's capacity to train the engineers and physicists necessary for infrastructure development and industrialization (Federal Ministry of Education, 2018). International comparative assessments corroborate these concerns; the Trends in International Mathematics and Science Study (TIMSS) consistently ranks Nigerian students significantly below global averages in science achievement (Martin et al., 2016; Mullis et al., 2016).

Existing research has identified multiple structural and pedagogical factors contributing to physics underachievement in Nigeria. Inadequate teaching resources, incomplete syllabus coverage, and the predominance of teacher-centered instructional strategies have been highlighted as primary constraints (Abamba & Chukwuka, 2021; Ogbiku & Ajaja, 2024). Evidence suggests that more than 80% of physics teachers in Nigerian secondary schools employ predominantly teacher-centered strategies, offering minimal opportunities for student interaction or practical experimentation (Ogunleye, 2007, as cited in Ajaja & Ogbiku, 2024). Such pedagogical approaches stand in stark contrast to internationally recommended best practices emphasizing active learning and collaborative problem-solving, and are consistently associated with low motivation and poor academic performance (Freeman et al., 2014; Deslauriers et al., 2011).

Infrastructural deficiencies further constrain effective physics instruction. A national survey conducted by the Education Sector Analysis Unit (2005) found that 65% of Nigerian secondary schools lacked functional science laboratories, while 78% reported critical shortages of qualified physics teachers. Recent assessments in Delta State confirm that these deficiencies persist largely unabated (Bawan, Kamgba, & Obi, 2024). The shortage of qualified teachers is particularly acute, with studies documenting that up to 40% of physics teachers hold only the minimum teaching qualification (National Certificate in Education), while 16% lack formal teaching certification entirely (Ossai et al., 2019), creating conditions at odds with national

policy requiring at least a bachelor's degree with pedagogical training. These structural limitations deny students critical opportunities to engage with physical phenomena directly, test hypotheses, and develop procedural knowledge—experiences identified by international research as foundational to deep learning (Hofstein & Lunetta, 2004). While these structural and pedagogical factors are undeniably critical, emerging evidence suggests that cognitive and affective variables particularly science self-efficacy, play an equally vital role in determining students' physics achievement (Bandura, 1997; Aslam & Alam, 2017; Okokon, Etor, and Uko, 2023). Self-efficacy, as conceptualized within Albert Bandura's Social Cognitive Theory (SCT), represents an individual's belief in their capability to organize and execute actions necessary to achieve specific performance outcomes within a particular domain (Bandura, 1997). Unlike generalized self-esteem, self-efficacy is domain-specific and task-specific, reflecting perceived rather than actual ability (Usher & Pajares, 2008). This distinction is empirically significant because self-efficacy beliefs frequently predict academic performance more powerfully than actual ability measures; they directly shape the degree of effort invested, persistence in the face of difficulty, and resilience following setbacks (Schunk & DiBenedetto, 2020).

Meta-analytic syntheses confirm moderate to strong positive correlations between academic self-efficacy and performance outcomes across subject areas and educational contexts. Honicke and Broadbent (2016) conducted a systematic review of 49 studies and found that academic self-efficacy consistently demonstrated one of the strongest relationships with academic performance, with effect sizes ranging from small to large across contexts. Students with strong self-efficacy exhibit greater motivation, set more challenging goals, employ more effective learning strategies, and demonstrate superior problem-solving persistence (Schunk & DiBenedetto, 2020; Richardson et al., 2012). Conversely, those with weak self-efficacy typically avoid challenging assignments, attribute poor outcomes to personal shortcomings rather than insufficient effort, and exhibit reduced academic engagement (Owoduni, 2019).

Within science education specifically, domain-specific science self-efficacy represents confidence in one's ability to successfully perform science-related tasks and understand scientific concepts. This construct significantly influences a learner's willingness to engage in complex problem-solving, predict course enrollment decisions, and shape career aspirations (Nissen, 2019; Marshman et al., 2018). Successful performance experiences enhance self-efficacy, creating positive feedback loops of achievement and engagement, while repeated

failures engender vicious cycles of disengagement and declining achievement (Bandura, 1997). Critically, research conducted within Nigerian contexts uniformly demonstrates that self-efficacy functions as a key determinant of student performance in physics. For instance, Okokon, Etor, and Uko (2023) found that science self-efficacy accounted for 34% of the variance in physics achievement among secondary students in Cross River State, Nigeria.

Despite the robust international evidence linking self-efficacy to achievement, and despite growing recognition of self-efficacy's importance within the Nigerian educational context, a critical gap persists in empirical research examining the relationship between science self-efficacy and physics achievement specifically within Delta State. While existing Nigerian studies have largely emphasized infrastructural and instructional challenges (Bawan et al., 2024; Ogbiku & Ajaja, 2024), the psychological dimensions of learning particularly science self-efficacy and its interaction with environmental and pedagogical factors, have been substantially underexplored. This research gap represents a significant impediment to designing effective, evidence-based interventions that simultaneously address both the environmental and psychological dimensions of physics learning.

Moreover, while large-scale infrastructural and pedagogical reforms demand considerable financial resources and extended implementation periods, interventions targeting students' self-efficacy beliefs offer more readily accessible and economically viable approaches to enhancing academic performance within existing resource constraints (Margolis & McCabe, 2006). Bandura (1997) identified four primary sources through which self-efficacy develops: mastery experiences (genuine success in performing tasks), vicarious experiences (observing similar others succeed), social persuasion (encouragement and feedback from credible sources), and physiological/affective states (emotional responses to performance situations). Notably, mastery experiences emerge as the most potent source of self-efficacy development. In the Delta State context, the prevailing teacher-centered pedagogy and inadequate laboratory practices systematically undermine opportunities for students to accumulate mastery experiences, thereby constraining the development of robust physics self-efficacy.

The present study addresses this critical gap by investigating the relationship between science self-efficacy and physics achievement among secondary school students in Delta State, Nigeria. Specifically, this research examines: (1) the correlation between science self-efficacy and physics achievement; (2) the predictive power of self-

efficacy for physics performance; (3) gender differences in self-efficacy levels; (4) the influence of teacher-centered instructional practices on self-efficacy development when controlling for sex; (5) the major psychological and environmental factors influencing students' science self-efficacy; and (6) the potential contribution of enhanced self-efficacy to improvements in student motivation, persistence, and achievement.

This investigation is grounded in Albert Bandura's Social Cognitive Theory (SCT), which posits that human learning and development result from dynamic, bidirectional interactions among personal cognitive factors, behavioral patterns, and environmental influences (Bandura, 1997). Central to SCT is the construct of self-efficacy, which operates as a task-specific confidence belief that directly influences motivation, effort, perseverance, and resilience—thereby functioning as an indispensable psychological predictor of academic achievement, particularly in cognitively demanding disciplines such as physics (Artino, 2012; Nissen, 2019).

The "triadic reciprocal causation" model proposed by Bandura elucidates how personal cognitive appraisals (including self-efficacy beliefs), behavioral actions, and environmental contexts continuously interact. For physics students, personal cognitive appraisals of capability, mediated by motivational and emotional states, influence behavioral engagement in problem-solving and inquiry, which in turn affects educational outcomes within specific social and physical environments such as classrooms equipped (or not equipped) with laboratory resources and supportive instructional climates (Zee et al., 2016; Okokon et al., 2023).

Furthermore, this theoretical framework integrates these mechanisms within an ecological perspective, acknowledging that self-efficacy development is modulated by contextual variables including socioeconomic background, gender, prior academic performance, instructional quality, and resource availability (Ajadi & Amoo, 2014; Biri, 2020; Ntsayakgosi et al., 2024). This conceptual integration positions self-efficacy as a pivotal mediating construct linking internal psychological dispositions with external academic outcomes, a perspective particularly salient for resource-constrained educational settings such as that characteristic of Nigerian secondary schools in Delta State.

The present investigation contributes to the literature in several important ways. First, it addresses a critical empirical gap in the Nigerian educational research literature, providing context-specific evidence on how science self-efficacy operates within the unique educational realities of Delta State. Second, by examining the

interaction between psychological factors (self-efficacy) and environmental/instructional factors (laboratory resources, teaching methods), this study elucidates the multifactorial determinants of physics achievement in resource-constrained settings. Third, the research extends the application of Social Cognitive Theory to physics education within a non-Western educational context, enhancing the cross-cultural generalizability of this psychological framework. Finally, by identifying actionable levers for improving self-efficacy within existing resource constraints, this study provides evidence-based guidance for policy makers, curriculum developers, and practitioners seeking to enhance physics education and student outcomes in Nigeria and similar contexts.

Literature Review

At the core of academic persistence in rigorous disciplines lies Bandura's (1997) Social Cognitive Theory (SCT), which posits that learning is not a passive receipt of information but a dynamic, reciprocal interaction between personal cognition, behavior, and the environment. Central to this triadic reciprocity is self-efficacy, which is defined as the internal conviction in one's capacity to execute tasks (Bandura, 1997). In the context of secondary school physics, this construct transcends mere confidence; it acts as the primary mediator for motivation, resilience, and cognitive engagement (Artino, 2012; Nissen, 2019). Because physics is inherently cognitively demanding, students' beliefs about their capabilities determine whether they meet challenges with increased effort or withdrawal (Talsma et al., 2018).

While Bandura identifies mastery experiences as the most potent source of self-efficacy, the literature suggests that these experiences are not created in a vacuum. In the Nigerian educational landscape, particularly within Delta State, the path to mastery is frequently obstructed. Traditional teacher-centered instruction and a chronic lack of functional laboratories, as evidenced by reports indicating that up to 65% of schools lack basic facilities (Bawan et al., 2024), systematically deny students the successful task completion necessary to build robust efficacy. When instructional climates are characterized by high-stakes assessment anxiety rather than scaffolded inquiry, the physiological and emotional states of students shift from excitement to avoidance (Gale et al., 2021; Iwuanyanwu, 2022). This suggests that self-efficacy in Nigerian physics classrooms is not merely a psychological trait but an ecological product shaped by resource availability and pedagogical quality.

The argument for self-efficacy as a predictor of achievement is further complicated by persistent demographic disparities. Research

consistently reveals a "confidence gap": female students often report lower physics self-efficacy even when their objective performance matches or exceeds that of their male peers (Marshman et al., 2018). This disparity is exacerbated in Nigerian contexts where social stereotypes and a lack of female STEM role models reinforce the perception of physics as a male domain (Biri, 2020). Furthermore, socioeconomic constraints act as a "ceiling" on efficacy development. While interventions like cognitive attributional retraining can help students reframe failure (Smith & Capuzzi, 2019), such psychological shifts are often neutralized by systemic inequities, such as the shortage of qualified teachers and instructional materials (Udeh-Aloysius & Achufusi, 2024).

Despite the wealth of global evidence confirming the link between science self-efficacy and physics achievement, and the documented success of localized studies in states like Cross River (Okokon et al., 2023), a significant empirical void remains. Current literature has extensively mapped the *theoretical* importance of Bandura's sources, yet there is a dearth of localized data specifically examining how the unique socio-educational infrastructure of Delta State influences these efficacy-achievement pathways. While national pass rates languish below 40%, existing studies have failed to provide a multi-dimensional analysis that simultaneously accounts for the specific instructional practices and resource limitations unique to Delta State's secondary schools. Consequently, it remains unclear whether the underperformance in this region is primarily a failure of psychological agency or a direct consequence of an environment that suppresses the very sources of self-efficacy required for STEM success. This study seeks to bridge this gap by investigating these multifaceted relationships to inform a more localized, context-sensitive pedagogical framework.

Methodology

Research Design and Sampling

This study adopted a quantitative analytic correlational survey design to examine the relationships between naturally occurring variables without experimental intervention. The target population included all senior secondary students (SS2 and SS3) enrolled in physics across public and private schools in Delta State's three senatorial districts for the 2024/2025 academic session.

A multi-stage probability sampling technique was employed to ensure regional representation. First, two Local Government Areas (LGAs) were purposively selected from each senatorial district. Second, one public and one private school were randomly sampled from each LGA,

totaling 12 institutions. Finally, students were stratified by class level and sex, resulting in a final sample of $N = 176$ ($n = 107$ males, $n = 69$ females; *Mean_{age}* = 16.3 years, $SD = 0.8$).

Instrumentation and Validation

The study utilized three validated instruments to measure the primary variables. First, the Physics Self-Efficacy Questionnaire (PSE-Q), a 40-item scale adapted from Lindström and Sharma (2011), assessed five dimensions of self-efficacy: problem-solving, goal persistence, exam confidence, academic beliefs, and peer efficacy. Responses were recorded on a 5-point Likert scale, with established reliability coefficients (α) between .78 and .92.

Second, a 50-item Physics Achievement Test (PAT), specifically aligned with the Nigerian Senior Secondary Certificate Examination (SSCE) curriculum, measured cognitive performance and conceptual application. Finally, a researcher-developed Questionnaire on Instructional Practices and Environmental Factors (QIPEF) evaluated classroom variables, including teacher-centered methods, laboratory resources, and psychological drivers such as intrinsic motivation and persistence.

Content validity for the researcher-developed tools was confirmed via expert review ($CVI \leq .80$), while pilot testing ($n = 50$) ensured internal consistency and psychometric adequacy for the Delta State educational context.

Procedure and Data Analysis

Following institutional ethical approval and administrative clearance, research instruments were administered in supervised settings by independent researchers to mitigate social desirability bias. To ensure that performance outcomes did not confound efficacy perceptions, the Physics Self-Efficacy Questionnaire (PSE-Q) and the Questionnaire on Instructional Practices and Environmental Factors (QIPEF) were administered prior to the Physics Achievement Test (PAT). All participants provided informed consent, with rigorous protocols in place to guarantee anonymity and data confidentiality.

Quantitative data were processed using SPSS Version 23. After verifying fundamental statistical assumptions including normality, linearity, and homoscedasticity, inferential analyses were conducted at a 0.05 level of significance. The analytical framework comprised:

- (1) Pearson Product-Moment Correlation: To examine the relationship between science self-efficacy and physics achievement (H_1).
- (2) Simple Linear Regression: To determine the predictive power of self-efficacy on academic outcomes (H_2).

- (3) Independent Samples t-test: To assess sex-based differences in self-efficacy levels (H_3).
- (4) Multiple Regression Analysis: To evaluate the collective influence of instructional practices, environmental factors, and psychological variables on self-efficacy while statistically controlling for sex (H_4 and H_5).
- (5) Descriptive Statistics: To establish baseline benchmarks for student motivation and persistence (H_6).

Results

Descriptive Statistics

Descriptive statistics indicated that students demonstrated moderate levels of science self-efficacy ($M = 55.09$, $SD = 12.34$, range = 28-89), while physics achievement scores were substantially lower ($M = 48.67\%$, $SD = 18.42\%$, range = 12%-96%). Male students reported marginally higher self-efficacy ($M = 55.49$, $SD = 11.66$) than female students ($M = 54.49$, $SD = 13.01$), though this difference was negligible. Data distributions approximated normality (skewness and kurtosis values within acceptable ranges), satisfying assumptions for parametric testing. Table 1 presents the descriptive statistics for all study variables.

Table 1: *Descriptive Statistics for Study Variables*

Variable	M	SD	Range
Science Self-Efficacy (total score)	55.09	12.34	28-89
Physics Achievement (%)	48.67	18.42	12-96
Male Self-Efficacy	55.49	11.66	—
Female Self-Efficacy	54.49	13.01	—

Note. $N = 176$ (Male $n = 107$, Female $n = 69$).

Relationship Between Self-Efficacy and Achievement

Pearson correlation analysis revealed a weak, non-significant relationship between science self-efficacy and physics achievement ($r = .046$, $p = .549$, 95% CI = $[-.042, .131]$). Table 2 presents the correlation results. Together with the regression findings, these results indicate that, within this sample, students' confidence in their physics capabilities did not meaningfully translate into academic performance—a pattern contrary to well-established theory.

Table 2: *Correlation Between Science Self-Efficacy and Physics Achievement*

Variables	R	p-value	95% CI	N
Self-Efficacy × Achievement	.046	.549	[-.042, .131]	176

Note. r = Pearson correlation coefficient; CI = Confidence Interval.

Simple linear regression confirmed that self-efficacy did not significantly predict achievement ($B = .016$, $\beta = .046$, $t = .600$, $p = .549$), as shown in Table 3.

Table 3: *Simple Linear Regression: Self-Efficacy Predicting Physics Achievement*

Predictor	B	β	T	p	R ²
Self-Efficacy	.016	.046	.600	.549	.002

Note. B = unstandardized coefficient; β = standardized coefficient.

Sex Differences in Self-Efficacy

An independent samples t-test indicated no statistically significant difference in science self-efficacy between male and female students ($t(174) = .527$, $p = .599$). Levene's test confirmed equal variances ($F = .595$, $p = .442$). This finding suggests sex parity in self-efficacy beliefs in this sample, differing from the sex gap traditionally reported in STEM contexts. Table 4 presents the complete results.

Table 4: *Independent Samples t-Test: Sex Differences in Science Self-Efficacy*

Sex	N	M	SD	t	Df	P
Male	107	55.49	11.66	.527	174	.599
Female	69	54.49	13.01			

Note. Levene's test for equality of variances: $F = .595$, $p = .442$.

Instructional Practices and Self-Efficacy

Multiple regression analysis demonstrated that teacher-centered instructional practices significantly predicted science self-efficacy when controlling for sex. In Block 1, sex alone explained 4.5% of variance ($\Delta R^2 = .045$, $p = .004$). Adding instructional practice in Block 2 yielded a substantial increase in explained variance ($\Delta R^2 = .239$, $p < .001$), with the final model accounting for 28.4% of variance ($R^2 = .284$). Standardized coefficients revealed that instructional practice (β

= .48, $p < .001$) was a substantially stronger predictor than sex ($\beta = -.16$, $p = .003$). Table 5 presents the hierarchical regression results.

Table 5: *Hierarchical Regression: Instructional Practices Predicting Self-Efficacy (Controlling for Sex)*

Model/Predictor	B	B	t	p	R ²	ΔR^2
Block 1					.045***	.045
Sex	—	—	—	.004		
Block 2					.284***	.239
Sex	—	-.16	—	.003		
Instructional Practice	—	.48	—	< .001		

Note. *** $p < .001$. B = unstandardized coefficient; β = standardized coefficient.

A two-way factorial ANOVA confirmed significant main effects for both sex ($F = 5.66$, $p = .018$) and achievement proxy ($F = 26.29$, $p < .001$), plus a significant interaction effect ($F = 5.17$, $p = .007$), suggesting differential impacts on male and female students. Results are presented in Table 6.

Table 6: *Two-Way Factorial ANOVA: Effects of Sex and Achievement on Self-Efficacy*

Source	Df	F	p	η^2
Sex	1	5.66	.018*	—
Achievement Proxy	1	26.29	< .001***	—
Sex $\times$ Achievement	1	5.17	.007**	—

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Environmental and Psychological Factors Predicting Self-Efficacy

Multiple regression analysis examined the combined predictive power of environmental and psychological factors. Environmental factors alone explained 33.7% of variance in self-efficacy ($R^2 = .337$, $F(1, 174) = 88.22$, $p < .001$). When psychological factors were added in Block 2, the model explained 52.2% of variance ($R^2 = .522$, $F(1, 173) = 66.83$, $p < .001$), with psychological factors contributing an additional 18.4% ($\Delta R^2 = .184$, $p < .001$). Standardized coefficients in the final model indicated that both environmental factors ($\beta = .412$, $p <$

.001) and psychological factors ($\beta = .499$, $p < .001$) significantly predicted self-efficacy, with psychological factors showing slightly greater relative influence. Complete results are presented in Table 7.

Table 7: *Hierarchical Regression: Environmental and Psychological Factors Predicting Self-Efficacy*

Model/Predictor	B	B	t	p	R ²	ΔR^2
Block 1					.337***	.337
Environmental Factors	—	—	—	< .001		
Block 2					.522***	.184
Environmental Factors	—	.412	—	< .001		
Psychological Factors	—	.499	—	< .001		

Note. *** $p < .001$. B = unstandardized coefficient; β = standardized coefficient. Block 1: $F(1, 174) = 88.22$; Block 2: $F(1, 173) = 66.83$.

Discussion of Findings

The findings of this study offer a critical expansion of Social Cognitive Theory within a resource-constrained, non-Western context. First, the non-significant relationship between science self-efficacy and physics achievement ($r = .046$, $p > .05$) contradicts established international trends, revealing a "contextual decoupling" phenomenon. This suggests a state of "illusory efficacy," where students maintain high self-confidence that is disconnected from conceptual mastery: a likely byproduct of the rote memorization and instructional rigidity prevalent in Nigerian secondary schools. Without rigorous formative feedback or authentic problem-solving, students may sustain inflated self-assessments that mask a lack of academic competence.

Second, the absence of significant sex differences in self-efficacy ($p = .599$) supports the "Sex Similarities Hypothesis" (Hyde, 2005). This indicates that STEM advocacy in Delta State may be successfully narrowing historical gaps in confidence; however, this parity has not yet translated into improved competence for either sex, reinforcing the identified "confidence-competence paradox."

Most significantly, the data demonstrate that self-efficacy is a highly responsive construct shaped by external factors, with teacher-centered practices and environmental variables explaining a substantial portion

of its variance $R^2 = .522$). The finding that instructional methods explain 23.9% of the variance in efficacy, far exceeding the influence of sex, suggests that pedagogical reform is a more powerful lever for student development than addressing demographic factors alone. Furthermore, the substantial impact of environmental factors ($R^2 = .337$) highlights that functional laboratories and classroom climate are not mere amenities but central mechanisms for constructing self-efficacy through "mastery experiences" (Bandura, 1997). In conclusion, bridging the gap between student confidence and academic success requires moving beyond rote instruction toward resource-rich, inquiry-based environments that ground psychological self-belief in genuine academic proficiency.

Implications and Conclusions

The findings offer critical insights for physics education reform in Delta State and similar resource-constrained environments. First, the tenuous link between efficacy and achievement suggests that psychological interventions are insufficient in isolation; enhancing student confidence must be integrated with structural improvements in laboratory facilities and a pedagogical transition toward inquiry-based instruction that provides scaffolded "mastery experiences". Second, the significant influence of instructional practices on self-efficacy ($R^2 = .284$) justifies institutional investment in teacher professional development. Training educators in active learning and formative assessment is a cost-effective strategy to displace the teacher-centered "chalk and talk" methods that currently dominate 80% of Nigerian classrooms (Akpokiniovo & Akudolu, 2023).

Third, the explanatory power of environmental factors underscores that functional laboratories and instructional materials are essential for grounded efficacy development (Oluwasegun, Ohwofosirai & Emagbetere, 2015). Without these, students' scientific self-belief remains abstract and disconnected from authentic practice. Finally, the observed sex-neutrality in efficacy levels must be sustained through inclusive pedagogies that continue to reinforce female students' perceptions of their scientific capabilities.

In conclusion, science self-efficacy in Delta State is a malleable construct significantly shaped by the instructional climate and school environment. While a "confidence-competence" paradox currently exists, where moderate self-belief does not yield high achievement, the data indicates this gap can be bridged through systematic pedagogical innovation and environmental support. Future research should utilize longitudinal designs to track efficacy trajectories during instructional shifts and qualitative methods to further unpack the mechanisms of the

efficacy-achievement paradox. Ultimately, by aligning psychological support with environmental and instructional reform, secondary schools can transform self-efficacy into a genuine catalyst for STEM achievement and career persistence.

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DELEGATION MINUS ABDICATION: LEADERSHIP ACCOUNTABILITY AND AUTHORITY RETENTION IN SOUTHWESTERN NIGERIAN STATE-OWNED UNIVERSITIES

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Abstract: *Delegation and accountability remain central to understanding leadership effectiveness within higher education governance, particularly in bureaucratic public university systems. This study investigates how delegation practices shape leadership accountability and authority retention in state-owned universities across Southwestern Nigeria. Drawing on Agency Theory and Stewardship Theory, the study utilised a quantitative survey of 260 senior academic and administrative personnel from six state universities. Using descriptive statistics, multiple regression, and mediation analysis, the study found that effective delegation significantly increases leadership accountability ($\beta = 0.47, p < 0.01$), while accountability strongly predicts authority retention. Weak oversight, poor feedback, and low ethical supervision correlate with partial abdication, fuelling administrative incoherence. The study concludes that accountability mediates the delegation–authority retention relationship and recommends structured performance contracts, transparent reporting systems, and strengthened ethical oversight for improved governance integrity.*

Keywords: *delegation of authority; leadership accountability; authority retention; delegation minus abdication.*

Introduction

Leadership is germane and remains central to success or failure of any organization including higher education and is crucial to governance effectiveness, institutional reputation, and service delivery. Nigeria in particular, state-owned universities contribute significantly to national development but continue to struggle with weak leadership

accountability, excessive centralization, and poorly designed delegation systems (Ogunleye & Adeyemi, 2022; Arogundade, 2018). Despite several reforms, many institutions in Southwestern Nigeria still operate within rigid bureaucracies where decision-making is heavily concentrated in the vice-chancellor’s office (Eze & Ibekwe, 2021). This over-centralization creates leadership imbalance, causing delegation to become either symbolic or to drift into abdication, leaving accountability inconsistent and ineffective.

Delegation involves transferring defined responsibilities to subordinates while leaders retain ultimate accountability (Robbins & Judge, 2020). When properly executed, it enhances responsiveness, staff empowerment, and organizational flexibility (Oghojafor & Ejumudo, 2021). However, in many public universities, delegation is misapplied, resulting in abdication—leaders withdraw oversight and lose control of essential processes (Adeleke, 2020). Such confusion between empowerment and withdrawal undermines governance, particularly where political interference, scarce resources, and entrenched hierarchies already weaken accountability (Nwosu, 2023; Ilesanmi, 2021).

Succinctly, Eze, (2019) affirmed that universities in Lagos, Ogun, Oyo, Osun, Ondo, and Ekiti States have recently experienced governance crises linked to unclear authority boundaries and weak oversight systems. Although leaders frequently assign administrative roles, they rarely sustain structured feedback or ethical accountability mechanisms (Ojo & Ilesanmi, 2020). This lack of supervision leads to inconsistent policies, mismanaged resources, and avoidable conflicts (Adeleke, 2020). Notably, these states value education highly and each maintains several state-owned universities in addition to federal, private, and faith-based institutions.

List of the state universities in Southwestern Nigeria:

State	University Name(s) and their established dates
Lagos	Lagos State University (LASU) (1983), Lagos State University of Education (LASUED) (2022), Lagos State University of Science and Technology (LASUST) (2021)
Ogun	Olabisi Onabanjo University (OOU) (1982), Moshood Abiola University of Science and Technology (MAUSTECH) (2017)
Oyo	Ladoke Akintola University of Technology (LAUTECH)

State	University Name(s) and their established dates
	(1990), Emanuel Alayande University of Education (2022)
Osun	Osun State University (UNIOSUN) (2006), University of Ilesa (2022)
Ondo	Adekunle Ajasin University (AAUA) (1999), Olusegun Agagu University of Science and Technology (OAUSTECH) (2008)
Ekiti	Ekiti State University (EKSU) (1982), Bamidele Olumilua University of Education, Science and Technology (2020)

This challenge highlights a key theoretical concern in leadership studies: distinguishing effective delegation which is an empowering process from abdication, which reflects withdrawal of responsibility. In Nigeria's tertiary institutions, this dilemma appears in recurring administrative failures where leaders either over-centralize decisions or transfer responsibilities without adequate oversight (Ogunleye & Adeyemi, 2022; Nwosu & Udeh, 2019). Both extremes weaken accountability, obstruct learning, and erode institutional credibility. Global scholarship stresses that delegation supports institutional sustainability only when paired with strong accountability systems and ethical leadership (Bass, 1990; Yukl, 2013; Northouse, 2021). Nigerian researchers further argue that organizational culture and political interference distort this balance (Akinbode, 2018; Oghojafor & Ejumudo, 2021). Traditions of authority deference limit open feedback, while patronage encourages selective accountability (Ilesanmi, 2021). Within universities, these tendencies suppress innovation and discourage subordinates from questioning inconsistent decisions (Arogundade, 2018).

Leadership accountability refers to a leader's duty to justify decisions and the use of delegated authority (Ojo & Ilesanmi, 2020). Authority retention denotes the leader's ability to maintain strategic control over delegated tasks (Nwosu, 2023). Together, these concepts form the "delegation minus abdication" model, which asserts that leaders must empower subordinates while sustaining clear ethical and performance oversight (Adeleke, 2020). This is especially relevant in Nigerian state universities where weakened supervision and unclear reporting lines often undermine accountability (Eze & Ibekwe, 2021).

Previous studies in Nigerian higher education have focused largely on transformational leadership (Adebayo & Akintunde, 2020), ethical leadership (Ilesanmi, 2021), and participatory decision-making (Arogundade, 2018). However, research exploring the relationship between delegation, accountability, and authority retention remains limited. This gap is significant given recent governance crises in Southwestern universities, including leadership conflicts, administrative redundancies, and weak compliance systems (Nwosu, 2023). Addressing this gap through empirical inquiry will strengthen leadership scholarship and provide evidence for governance reforms in Nigeria's university system. Thus, this study investigates leadership accountability and authority retention through a delegation minus abdication lens among administrators in Southwestern state-owned universities.

Objectives of the study

The main objective of this study is to reassess delegation minus abdication: an empirical analysis of leadership accountability and authority retention in southwestern Nigerian state-owned universities and the specific ones are to:

examine the extent to which effective delegation predicts leadership accountability among senior administrators in state-owned universities in Southwestern Nigeria.

determine the relationship between leadership accountability and authority retention within the governance structures of state-owned universities in Southwestern Nigeria.

assess the mediating role of leadership accountability in the relationship between delegation and authority retention in Southwestern Nigerian state-owned universities.

Research Questions

The following research questions were formulated in order to provide appropriate response to the study

To what extent does effective delegation predict leadership accountability among university leaders in Southwestern Nigerian state-owned universities?

What is the nature of the relationship between leadership accountability and authority retention in state-owned universities across Southwestern Nigeria?

Does leadership accountability mediate the relationship between delegation and authority retention in the governance of Southwestern Nigerian state-owned universities?

Literature Review

Delegation of Authority

Delegation of authority is a key managerial function that enables leaders to assign responsibilities while retaining final accountability (Robbins & Judge, 2020). As noted by Northouse (2021), effective delegation improves flexibility, empowers employees, and enhances leadership efficiency. It allows leaders to focus on strategic priorities essential for institutional sustainability. However, in Nigerian institutions, delegation is frequently obstructed by rigid hierarchies, unclear reporting structures, and low trust between supervisors and subordinates (Oghojafor & Ejumudo, 2021). These limitations often stem from leaders' reluctance to release control, reinforcing centralization. In state-owned universities, delegation typically involves distributing administrative, academic, and financial duties from top officers—such as vice-chancellors, deans, and directors—to departmental leaders and faculty (Ogunleye & Adeyemi, 2022).

Academic delegation may include curriculum oversight and research administration. Effective delegation requires distinguishing between authority (permission to act) and accountability (responsibility for outcomes) (Robbins & Judge, 2020). Without proper monitoring, delegation slips into abdication, where leaders withdraw oversight entirely. This breaks the chain of command and weakens structural governance. Conversely, well-managed delegation strengthens subordinate confidence and builds internal leadership capacity (Northouse, 2021). Nigerian universities often fail to realize these benefits due to systemic barriers to decentralized management (Oghojafor & Ejumudo, 2021).

Abdication and Authority Vacuums

Abdication arises when leaders delegate tasks but withdraw from supervision, resulting in weakened organizational control (Adeleke, 2020). In Nigerian public universities, it appears in delayed decisions, poorly supervised committees, and weak communication across administrative levels (Eze & Ibekwe, 2021). These gaps create overlapping duties, inconsistent policies, and inefficiency. With minimal senior oversight, minor issues escalate and require major interventions. Such disengagement also lowers morale, as staff feel unsupported.

Arogundade (2018) notes that abdication contributes to rising conflicts and declining discipline within universities. The resulting loss of strategic direction reduces institutional adaptability in a rapidly changing higher education sector and undermines core teaching and research mandates. By contrast, intentional delegation supported by

feedback and accountability fosters ownership, strengthens performance, and sustains organizational coherence (Ojo & Ilesanmi, 2020). Oversight is therefore not micromanagement but an essential mechanism for maintaining alignment and compliance.

Leadership Accountability

Leadership accountability represents a leader's obligation to justify actions, decisions, and use of delegated authority in achieving institutional goals (Ilesanmi, 2021). It involves transparency, ethical responsibility, and responsiveness to stakeholders. In the Nigerian higher education sector, accountability is multidimensional, covering administrative, academic, and financial domains (Nwosu, 2023). However, many institutions lack formalized accountability structures, relying instead on personal ethics or informal supervision (Ogunleye & Adeyemi, 2022). Notably, leadership accountability enhances institutional trust and staff morale, yet it remains the weakest link in public sector management due to cultural deference to authority. The balance between delegation and accountability thus determines the extent to which authority is retained or lost (Adebayo and Akintunde (2020).

Effective accountability systems serve as a critical check against the misuse of power and it promotes judicious resource management. Furthermore, the absence of clear mechanisms can lead to a culture of impunity, which severely damages the university's reputation and stakeholder confidence. Institutionalizing performance audits and clear reporting lines are therefore essential steps to embed a sense of answerability across all tiers of leadership. This rigorous approach to oversight ensures that leaders are held responsible for both successes and failures in their designated areas (Adebayo and Akintunde 2020). Ultimately, robust accountability frameworks are indispensable for driving institutional quality and achieving educational mandates. Without them, leadership may devolve into mere ceremonial roles without real consequence.

Authority Retention

Authority retention refers to the degree to which leaders maintain decision control and responsibility after delegating authority. It is achieved through monitoring, feedback loops, and performance appraisal systems. When leaders delegate without ensuring these structures, authority diffusion occurs, and it undermines strategic oversight (Eze, 2019). In state-owned universities, authority retention ensures that delegated officials operate within policy boundaries and report outcomes consistently. Without this, administrative drift and

misalignment with institutional objectives arise (Nwosu, 2023). This strategic oversight prevents decentralized units from pursuing objectives that conflict with the university's broader mission.

Worth noting is that regular review meetings and clear performance indicators are vital tools for maintaining this level of control without resorting to micromanagement. The concept is not about reversing delegation but about establishing guardrails to manage risk and ensure uniformity in standards. Moreover, the ability to reassert direct control in crisis situations is a fundamental element of responsible authority retention (Oghojafor & Ejumudo, 2021). Leaders must strike a delicate balance to foster subordinate autonomy while safeguarding the institution's core interests. This active retention is key to preventing the complete loss of control that characterizes abdication.

Delegation Minus Abdication

The Delegation Minus Abdication paradigm conceptualizes leadership effectiveness as the ability to transfer responsibility while retaining ethical and strategic control. It advocates for empowerment combined with accountability, which is a balance between trust and supervision. In Nigeria's higher education context, this approach emphasizes structured delegation, performance monitoring, and ethical stewardship as critical governance principles (Ilesanmi, 2021). This framework provides a practical model for university administrators seeking to decentralize power without sacrificing institutional integrity.

It shifts the focus from simple task assignment to cultivating capable and responsible subordinates who are fully aware of their operational limits. According to Ojo & Ilesanmi (2020), explicit policy guidelines that define the scope of delegated power are central to making this framework operational. Furthermore, this model requires leaders to maintain a strategic distance, intervening only to provide high-level guidance or correct significant deviation (Adeleke, 2020). Adopting this philosophy ensures that delegation becomes a tool for capacity building, rather than a precursor to administrative anarchy. It is the golden mean between controlling every detail and completely disengaging from the process.

Theoretical Review

This study is guided by Agency Theory and Stewardship Theory to explain leadership accountability. Agency Theory (Jensen & Meckling, 1976) focuses on the relationship between leaders (principals) and subordinates (agents), emphasizing the need for monitoring systems to ensure agents act in the organization's interest. Within universities, such oversight includes performance contracts, audits, and appraisal

processes (Eze & Ibekwe, 2021). Weak monitoring increases the risk of moral hazard, making Agency Theory relevant to authority retention and accountability structures, including necessary feedback mechanisms (Oghojafor & Ejumudo, 2021). In contrast, Stewardship Theory (Davis, Schoorman & Donaldson, 1997) assumes that empowered and trusted subordinates naturally work towards organizational goals.

Scholars such as Adeleke (2020) and Ogunleye & Adeyemi (2022) argue that effective delegation strengthens psychological ownership and accountability. However, stewardship must still operate within structured accountability systems to prevent abdication. Together, both theories form a dual accountability model where trust-based empowerment and control mechanisms coexist. This combined model is vital in the Nigerian university context, where cultural norms emphasize hierarchy and limit open feedback. Literature consistently shows that delegation improves efficiency only when supported by clear accountability and authority retention structures. Yet bureaucratic practices, political influence, and weak oversight in state-owned universities often distort this ideal relationship.

Methodology

This study adopted a quantitative cross-sectional survey to assess the relationship between delegation, accountability, and authority retention in state-owned universities across six Southwestern states, these are: Lagos, Ogun, Oyo, Osun, Ondo, and Ekiti. Senior Lecturers (SL) and Assistant Deputy Registrars (ADR) constituted the study population. All accredited state-owned universities were purposively selected, with 20 respondents drawn from each institution. Data were gathered using the Delegation and Accountability Leadership Scale (DALSL), a structured questionnaire measured on a 5-point Likert scale. The instrument was validated by experts in Educational Management and Organisational Leadership. Reliability was confirmed through a pilot study conducted in a state university outside the study area, yielding Cronbach’s Alpha values above the 0.70 benchmark.

Results and discussion of findings

Research Question 1: To what extent does effective delegation predict leadership accountability among university leaders in Southwestern Nigerian state-owned universities?

Parameter	Value
Unstandardised Coefficient (B)	0.47
Standard Error	0.055

Parameter	Value
t-value	8.50
p-value	< 0.001
R ²	0.219
N (Respondents)	260

Interpretation of Results

The regression analysis shows that effective delegation significantly predicts leadership accountability among university leaders in Southwestern Nigerian state-owned universities. The beta coefficient ($\beta = 0.47$, $p < 0.001$) indicates a strong positive relationship, suggesting that for every one-unit increase in delegation efficiency, leadership accountability increases by approximately 0.47 units. The R² value of 0.219 means that about 21.9% of the variation in leadership accountability is explained by the effectiveness of delegation practices. This implies that delegation when supported by clear authority boundaries, communication channels, and oversight systems contributes substantially to fostering accountability among university leaders.

The study shows a strong and significant relationship between leadership accountability and authority retention in Southwestern Nigeria’s state-owned universities. This supports earlier findings that accountability is central to maintaining administrative control and institutional stability (Ojo & Ilesanmi, 2020; Nwosu, 2023). Leaders who uphold transparent reporting, ethical supervision, and sound decision-making retain stronger strategic control within university governance (Eze & Ibekwe, 2021; Adeleke, 2020). This outcome aligns with Agency Theory and Stewardship Theory. As Jensen and Meckling (1976) note, effective monitoring reduces moral hazard and enhances goal alignment.

In practice, Nigerian vice-chancellors and department heads who implement structured oversight are better positioned to maintain authority and avoid administrative drift (Ogunleye & Adeyemi, 2022). Consistent with Stewardship Theory (Davis, Schoorman & Donaldson, 1997), accountability frameworks also promote trust, responsibility, and organisational legitimacy (Oghojafor & Ejumudo, 2021). Conversely, weak feedback systems and poor ethical supervision lead to authority dilution, decision delays, and governance instability (Ilesanmi, 2021; Arogundade, 2018). Delegation without adequate oversight results in policy inconsistency and reduced performance (Adeleke, 2020; Nwosu, 2023). Thus, accountability remains the central link between delegation and control. Strengthening

performance contracts, transparent appraisals, and ethical reporting mechanisms will enhance governance integrity and efficiency in Nigerian higher education (Ogunleye & Adeyemi, 2022).

Research Question 2: What is the nature of the relationship between leadership accountability and authority retention in state-owned universities across Southwestern Nigeria?

Statistic	Value
R ²	0.215
Adjusted R ²	0.212
F-statistic	70.86
p-value	< 0.001
Beta (Leadership Accountability)	0.454
Std. Error	0.054
t-value	8.42

Interpretation

The results show that leadership accountability significantly predicts authority retention in Southwestern Nigerian state-owned universities. The $\beta = 0.454$ ($p < 0.001$) means that for every 1-unit increase in leadership accountability, authority retention increases by approximately 0.45 units, holding other factors constant. The $R^2 = 0.215$ indicates that leadership accountability explains about 21.5% of the variance in authority retention, suggesting that while accountability plays a significant role, other variables (such as institutional culture, oversight mechanisms, and ethical supervision) may also influence authority retention.

Discussion

The study revealed a strong, positive, and statistically significant relationship between leadership accountability and authority retention in Southwestern Nigerian state-owned universities. Leaders who uphold accountability by providing justification for decisions, supervising delegated roles, and enforcing compliance tend to maintain greater institutional control and stability (Ojo & Ilesanmi, 2020; Nwosu, 2023). Effective accountability frameworks strengthen authority retention by preventing abdication and ensuring that delegated officers operate within established policy and ethical boundaries (Adeleke, 2020; Eze & Ibekwe, 2021). Conversely, weak feedback and ethical supervision were associated with authority

diffusion and decision-making bottlenecks, undermining administrative coherence (Ogunleye & Adeyemi, 2022; Ilesanmi, 2021).

These findings underscore that leadership accountability forms the foundation of sustainable authority retention, serving as the mechanism that preserves control while allowing empowerment (Oghojafor & Ejumudo, 2021). The results reinforce Agency Theory, which highlights monitoring and accountability as key to maintaining control over delegated authority (Jensen & Meckling, 1976; Eze & Ibekwe, 2021), and align with Stewardship Theory, which emphasises that transparent and ethical accountability enhances institutional legitimacy and leader–follower trust (Davis, Schoorman & Donaldson, 1997; Adeleke, 2020). Within the governance structures of Nigerian state-owned universities, embedding transparent reporting systems, performance contracts, and ethical evaluation mechanisms is therefore essential to prevent delegation from degenerating into abdication and to foster a culture of responsible empowerment (Ogunleye & Adeyemi, 2022; Arogundade, 2018)

Research Question 3: Does leadership accountability mediate the relationship between delegation and authority retention in the governance of Southwestern Nigerian state-owned universities?

Statistical Analysis

Variable	Coefficient (β)	Std. Error	t- value	p- value	R ²	N
Delegation Efficiency → Leadership Accountability	0.47	0.055	8.52	< 0.001	0.22	260

Interpretation

The regression analysis indicates that effective delegation significantly and positively predicts leadership accountability among leaders in Southwestern Nigerian state-owned universities ($\beta = 0.47$, $p < 0.001$). This means that for every one-unit increase in effective delegation, there is a 0.47-unit increase in leadership accountability, showing that leaders who delegate tasks efficiently while maintaining structured oversight tend to achieve stronger accountability outcomes. The R² value of 0.22 suggests that delegation efficiency explains approximately 22% of the variation in leadership accountability, indicating a substantial effect within complex university governance systems.

Discussion

The result underscores that effective delegation is a strong determinant of leadership accountability in Nigerian state-owned universities. This

is in tandem with the submission of Oghojafor & Ejumudo, 2021; Ojo & Ilesanmi, (2020) leaders who clearly define responsibilities, provide guidance, and establish monitoring structures are more likely to ensure that delegated officers perform within ethical and policy frameworks. This finding aligns with Agency Theory (Jensen & Meckling, 1976), which emphasizes that principals (university leaders) must implement monitoring mechanisms to ensure agents (subordinates) act in the institution’s interest. When leaders maintain oversight through transparent performance evaluation and reporting systems, they minimize moral hazard and promote accountability (Eze & Ibekwe, 2021).

Similarly, Stewardship Theory (Davis, Schoorman & Donaldson, 1997) supports this outcome by arguing that subordinates, when empowered under structured accountability frameworks, develop a sense of ownership and commitment to institutional goals. Hence, effective delegation anchored in trust and ethical supervision enhances accountability and institutional performance (Adeleke, 2020; Ogunleye & Adeyemi, 2022). Moreover, the findings resonate with Northouse (2021) and Robbins & Judge (2020), who assert that delegation, when effectively managed, fosters responsibility and transparency in organizational leadership. Within the Nigerian context, Arogundade (2018) and Nwosu (2023) have also noted that accountability often deteriorates when delegation is poorly structured or when hierarchical rigidity limits feedback.

Summary of Findings

Variable Relationship	Empirical Result	Interpretation
Delegation Accountability	→ $\beta = 0.47, p < 0.01$	Effective delegation improves leadership accountability.
Accountability Authority Retention	→ Positive Significant	& Accountability mechanisms help leaders retain strategic control.
Delegation → Authority Retention (via Accountability)	Mediated Relationship	Accountability mediates delegation’s impact on authority retention.

Conclusion

This study therefore concludes that leadership accountability is the linchpin connecting effective delegation with authority retention in Nigerian state-owned universities. Delegation succeeds not by

transferring power alone, but by embedding systems of feedback, trust, and ethical supervision that ensure leaders maintain ultimate responsibility. Leadership approach profoundly dictates the success of delegation frameworks and the resulting institutional accountability. It specifically suggests that delegation, when strategically applied and supported by ethical, transformational leadership significantly enhances managerial performance and administrative effectiveness.

It also highlights persistent challenges rooted in cultural determinants of leadership behavior and the structural reality of accountability deficits. Furthermore, effective delegation is not merely the assignment of tasks, but the transfer of authority tied to a robust, ethical, and structural accountability mechanism and again, institutionalizing accountability requires a fundamental shift toward leadership that actively promotes and protects delegated authority, thereby bridging the gap between performance expectation and organizational reality.

Recommendations

Based on the findings of this study, the following recommendations are proffered to organizational leaders, policymakers, and future researchers in Nigeria:

1. Organisational leaders, especially in public institutions and universities, should receive continuous training focused on the tenets of transformational leadership. This style, characterized by inspirational motivation and intellectual stimulation, is necessary to foster a culture of staff engagement and self-direction, which is crucial for effective delegation.
2. Organisations must develop and rigorously implement formal delegation frameworks that clearly define the scope of authority transferred, the corresponding responsibilities, and non-negotiable accountability metrics. Delegation must be adaptive but simultaneously robust, ensuring that authority retention issues do not undermine efficiency.
3. Given the documented accountability deficit, institutions must strengthen the ethical and structural components of oversight. This involves establishing independent internal audit functions and ensuring swift, transparent disciplinary actions for lapses in ethical conduct or accountability, thereby reinforcing the linkage between ethical behaviors and leadership efficiency.
4. Policymakers in education and civil service training should integrate cultural determinants of leadership into official training curricula. This will help leaders navigate the inherent cultural complexities while upholding universal standards of transparency and performance control.

5. Future research should move beyond single-sector studies to conduct cross-institutional and cross-cultural comparisons of delegation and accountability mechanisms. Longitudinal studies are needed to track the long-term impact of adopting transformational leadership and formalized delegation systems on measurable performance outcomes particularly across different tiers of Nigerian government and corporate life.

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EXTANT AND EMERGENT APPROACHES IN ESL TEACHING: TRANSLANGUAGING INSTRUCTION IN NIGERIAN SECONDARY SCHOOLS: TEACHERS' AND STUDENTS' PERCEIVED PROBLEMS AND PROSPECTS

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Abstract: *Nigeria is a multilingual society, where English co-exists with and prevails over 450 indigenous languages. English is taught as a second language through various approaches, including Classical, Structural, Natural, Functional-Notional, and Oral-Situational, which generally prioritise the use of English over mother tongues, with the exception of the Classical approach. Translanguaging emerged in the 1980s as a paradigm in foreign language teaching, gaining focus by 2001. It involves the use of two or more languages by learners and teachers during the teaching process. Literature reveals the facilitative effect of translanguaging in foreign language learning, but research on the topic is primarily exploratory and more prevalent in advanced countries than developing ones, Nigeria inclusive. This study therefore, investigated teachers' and students' perceived awareness of, problems and prospects of translanguaging instruction in English language teaching in Nigerian secondary schools. Purposive and random sampling techniques were used to select 120 teachers and 250 students from 25 public schools. Data were collected using two Questionnaires and a structured interview. Results revealed teacher and students low level awareness of translanguaging in English lessons (whole scale mean: 2.83 and 3.11) respectively. They showed moderate acceptance of translanguaging as an instructional*

approach (mean score: 3.94 and 3.98). They also revealed that translanguaging will be difficult to practice in a class made up of students with diverse mother tongues (mean score: 3.74; 4.37) and due to lack of well-known methods of translanguaging (mean score: 3.51; 4.33). Both teachers and students were doubtful of the positive effects of translanguaging in ESL lessons (item 6: mean score: 2.01). The study, therefore concluded that there is urgent need to popularise multilingual education especially in developing countries. Also, clear-cut strategies and methods should be designed to enhance the use of translanguaging; students and teachers should be sensitised on the benefits/prospects of translanguaging.

Keywords: *approaches; translanguaging instruction; pedagogy.*

Introduction

Language is the fulcrum upon which the society is organized and functions. Through its medium, communication is fostered among individual members and constituent linguistic groups. Besides, language serves as the vehicle of education, human resource development, international relations, and effective participation in the globalized and technological world among others. The central role of language in the education process is highlighted by Olofinsawo et al. (2024) who note that a society cannot educate its citizen without the means of language(s). The achievement of educational goals and aspirations is closely tied to language. Therefore, the choice of language use in communicating values, traditional knowledge, and contents at all educational levels is of top priority to the teaching-learning process.

Hence, in most countries of the world especially African countries, the choice of languages or media of instruction have always been difficult and controversial. This is because the language of the colonial masters dominated the indigenous languages partly because most of the indigenous languages are not developed and therefore, could not be used in educational settings. The colonial language was also imposed and seen as the language of civilization and development. However, it is believed that the spirit of nationalism, the desire to preserve the people's cultural heritage and identity motivated the desire to enthrone the indigenous languages and give them a pride of place in the scheme of things. This is also coupled with the realization that people learn better in their mother tongue than in a foreign language (Olofinsawo et al, 2021).

The Nigerian government's national education policy states that the language of the immediate environment should be used as the medium of instruction from lower primary school to upper primary school, while English will be used from upper primary school (primary four) until tertiary level (NPE, 2013). This stipulation shows that the English language is used as the dominant medium of instruction at many educational levels. Given its significance in education, various approaches have been intentionally employed to teach the English language. The approaches which underpinned English language teaching in Nigeria include: the classical /grammar translation approach, Natural approach, the Cognitive approach, the Functional-Notional approach which influenced language teaching since the early 1970s. Others are: Oral approach and Situational language teaching (1930s-1960s., the whole language philosophy and translanguaging approach which emerged since the 1980s.

Although the above cited approaches have their strengths and weaknesses, they were inadequate in bringing about the desired communicative competence in the learner. For instance, Yan (2024) argues that even though methodologies like communicative language teaching and Task-based language teaching are highly supported, they are still limited in influencing language competency. This issue was evident in students' ineffective communication skills across the four main language areas (listening, speaking, reading, and writing) resulting in their low academic performance in internal and external exams. (Iyekekpolor 2021). There is a need to explore alternative approaches to language teaching that address the weaknesses of previous ones. In recent times, the clamor for learners to be taught in their mother tongue and also the emerging trend for nationalism or de-globalization have recently led to new interests in the role of languages other than English in the teaching and learning processes (Memari, 2024 & Chicherina & Strelkova, 2023). Furthermore, the need to solve modern educational problems has necessitated fresh approaches which will address persistent problems of the past and provide students with an education appropriate to the needs of a modern, information- based global economy (Anya et al., 2021). One of these approaches is translanguaging.

It encourages the use of all the speech repertoire of the Translanguaging emerged as a new approach to language teaching in the 1980's through a Welsh educator, Williams C. (Rasmin et al., 2023). It however did not receive much attention until recently when researchers developed interest in applying translanguaging theory in the English as a foreign language classroom (Yan, 2024) learner in teaching or attaining competency in the second language and also other content or

subject areas. This approach blurs the lines between different languages and encourages a comprehensive view of one's linguistic repertoire (Dougherty, 2021). It also encourages learners and teachers to be bilingual and multilingual in nature since all the linguistic properties of the learners are deployed in the second language classroom. For instance, Lau (2020) avers that translanguaging pedagogy helps advance a political agenda to advocate for the political and education rights of marginalized languages and bodies, disrupting not only segregation between modalities but also between major and minor languages

Translanguaging represents a shift from the monolingual approach to language teaching to the multilingual practice. It has been variously defined by authors to foster understanding and effective use of the approach in formal education settings. For instance, Gracia (2009), cited in Dougherty (2021), defined translanguaging as the act performed by bilinguals of accessing different linguistic features or various modes of autonomous languages to maximize communicative potential. She explained further that translanguaging in an educational setting is the practice of utilizing the full linguistic repertoire of all students and teachers in order to interact socially, academically and cognitively. Likewise, Krashen (1987) and Swain (1985), as cited in Dougherty (2021), explain translanguaging as the process of delivering comprehensible input and producing comprehensible output, respectively, using the proffered languages of the emergent bilingual. In other words, translanguaging facilitates the use of indigenous languages as comprehensible input and output in understanding and using the target language to communicate.

Furthermore, Otheguy et al. (2015), cited in Rajendram and Jun (2023), submit that translanguaging theory delineates the utilization of a speaker's complete linguistic repertoire, disregarding strict compliance with the socially and politically established bounds of designated languages. Put differently, it is an integrated approach to teaching language and not the teaching of two separate languages. This submission is based on the premise that multilingual learners possess a cohesive linguistic system that they utilize and develop via diverse interactions and processes of meaning-making, irrespective of rigid linguistic boundaries.

This approach to language learning is hinged on Lev Vygotsky's (1968) Social Constructivism Theory (SCLT). Vygotsky submits that language and culture are the major tools used in shaping human experience and reality. Hence, it is assumed that language and culture determine how humans develop intellectually and also how they

perceive the world. Hence, language serves as the fundamental instrument for communication and the sharing of culturally rooted learning experiences within the teaching and learning process. Social constructivism highlights the importance of social interactions in learning, emphasizing conversations and knowledge application to meet educational goals (Akpan et al., 2020). Translanguaging equally promotes cognitive and social development by integrating all of a learner's languages, enhancing knowledge construction and fostering metalinguistic awareness, as well as critical thinking skills (Varsta, 2025). It allows students to navigate between their home and second languages seamlessly, utilizing diverse teaching strategies. This approach helps students leverage their full linguistic abilities for better information processing, deeper engagement with content, and decreased cognitive overload (Varsat 2025 & Ticheloven et al., 2019). Despite the importance of translanguaging as an emerging approach in language learning, there are varied views about its use in second language learning situations. Firstly, the fear of not being competent in the target language may encourage both students and parents to resist this approach (Yan, 2020). This is particularly evident in Nigeria, where parents and students view the English language as prestigious, stemming from a negative attitude towards native languages (Ezeokoli et al., 2019). However, translanguaging is not the teaching of two separate languages in an instructional classroom but an integrated approach to language which utilizes all the languages spoken by educators and students to purposefully and simultaneously deliver instruction and teach the target language (Dougherty, 2021). Likewise, Chicherina et al. (2023) argue that the basic idea of translanguaging is that one language reinforces the other in order to improve understanding and intensify learners' involvement in class activities in both languages. This approach therefore seems to be the equilibrium between language experts who believe that students learn better when taught in their mother tongues (Ekeh, 2020 & Ezeokoli et al., 2019) and those who see the target language as a prestigious language. It has also been argued that there are no clear-cut strategies that can be used in implementing this approach, and it is also time-consuming. For instance, some of these teachers are not well-groomed in the native languages due to this; they may find it challenging to allocate time effectively between languages, potentially leading to a loss of focus on the primary language (Yan, 2024). In a multilingual classroom, employing a translanguaging approach may present challenges as teachers are required to utilize the native languages of all students. Neupane's (2021) study shows that the participants agreed that bringing the native languages of every student to classrooms was

challenging, although they claim that translanguaging enhances students' creativity and participation in class. This indicates that teachers who use this approach must be fluent in their native languages and develop practical application skills. Moreover, Chicherina et al., (2023) submit that translanguaging's primary characteristic is its emphasis on communication rather than language. Hence, the essence of the translanguaging approach in language learning is communicative competence and the ability to understand and translate concepts in other subject areas effectively. In accordance with this, Strelkova's (2023) study reveals that additional learning experiences enhance students' commitment to intensive language studies and boost their confidence in studying non-language subjects in English.

Literature Review

Translanguaging as a novel approach to English language teaching and learning has attracted a number of studies and investigations. These studies reveal the benefits of translanguaging instruction in improving communicative competence in the target language and students' academic achievement. For instance, Yan's (2024) analysis of translanguaging pedagogy for learning English in China shows that translanguaging serves as an effective pedagogical approach in K-12 EFL education. Memari (2024) studies language skills development via translanguaging among undergraduates in Tehran, Iran, and reveals that translanguaging significantly improved students' English language skills. Likewise, Ozturk and Cubukai (2022) explore student-directed translanguaging in the English-centric classroom in Turkey. The study reveals that students have positive attitudes towards translanguaging, while the quantitative data shows that students have negative perceptions of translanguaging.

In another study, Chcherina and Strelkova (2023) investigate translanguaging in English language teaching: perceptions of teachers and students. The participants were 581, comprising 47 teachers and 534 students of two Russian universities where the medium of instruction and management is Russian. Identical questionnaires were used for both teachers and students. They were both asked to express their perceptions on the value of ELT and learning and English medium instruction. Results indicate that students and teachers agreed that the use of Russia should be minimized in English language teaching. Both teachers and students moderately acknowledged the successful careers of university graduates.

Furthermore, Rasmin and Nur (2023) conduct a systematic review of translanguaging in EFL classrooms and its impact on students' performance at a secondary level in Indonesia. Their findings show

that translanguageing occurred in learning foreign languages in Indonesia and was effective in explaining learning materials, managing classes and clarifying the material. Bozorgian and Fallapour (2015) also study of the use of mother tongue or local language in learning English as a foreign language show that the local language aids in class management, clarifies objectives, fosters a friendly environment, confirms understanding, and helps reduce student anxiety during lessons. In addition, Sahib (2019) study revealed that Translanguageing is effective in Indonesian high school EFL classrooms, with teachers employing strategies for explaining materials, introducing lessons, engaging students, assigning tasks, and providing feedback.

Nyimbili et al., (2021) study the challenges teachers and pupils faced as a result of teaching and learning using the translanguageing pedagogical practices in a multilingual grade 1 class of Lundazi District. The study indicates that employing translanguageing practices in literacy education faces challenges, including a mismatch between the language of instruction and students' familiar languages, a stringent monolingual language policy during learning, assessments focused exclusively on the regional language, and insufficient teaching materials that support monolingual learning.

Libradilla (2024) examines parents' and students' views on translanguageing practices in multilingual classrooms. Five Filipino parents and five students who utilized translanguageing were interviewed. Findings indicate that students see translanguageing as beneficial for enhancing learning, fostering a positive classroom environment, and improving language skills. However, challenges identified include difficulties in managing multiple languages, comprehension gaps, insufficient learning resources to address these gaps, and opposition from traditional educators.

The study of literature has revealed a surge of interest in and divergent investigations on translanguageing in English language teaching and learning in its various contexts (ESOL, EFL and ESL), mostly in advanced countries while such studies are rare in developing countries of Africa including Nigeria. Some of these studies centered on the effect, impact, perceptions of teachers and students, attitude, strategies and methods of translanguageing instruction in English language teaching and learning. There is, however, a dearth of studies on translanguageing in English pedagogy in developing countries of Africa including Nigeria. Given this background, the present study examined teachers' and students' awareness of and perceptions on the problems and prospects of translanguageing instruction in teaching English as a second language in Nigeria. ESL).

Research Questions

Arising from the problem of the study the following research questions were answered:

What are the levels of:

- Teachers' perceived awareness of translanguaging in ESL classrooms?
- Students' perceived awareness of translanguaging in esl classrooms?
- Is there any significant difference between the perceived awareness of teachers and students of translanguaging in ESL lessons?

What are:

- Teachers' perceived problems of translanguaging in ESL lessons?
- Students' perceived problems of translanguaging in ESL lessons?
- Is there any significant difference between teachers' and students' perceived problems of translanguaging in ESL lessons?

What are:

- Teachers' perceptions on the prospects of translanguaging in ESL lessons?
- Students' perceptions on the prospects of translanguaging in ESL lessons?
- Is there any significant difference between teachers' and students' perceived prospects of translanguaging in ESL lessons?

Methodology

The survey research design (mixed method) was adopted. The population for the study comprised secondary school teachers of English language and their senior secondary two (SS2) students in Akure (Metropolis), Ondo State. Multistage Sampling Technique was used to select schools, teachers and students for the study. First, purposive sampling technique was used to select schools that have five teachers of English language and above each. Second, from the schools with five English teachers and above, random sampling was used to select twenty schools and from each school, one intact class of SS2 was randomly selected and all the teachers of English were totally enumerated. In all, the sample for the study consists of 120 teachers of English and their 150 SS2 students from 20 schools in Akure.

Four research instruments were used in the study:

- Teachers' and students' perceived Awareness of Translanguaging Instruction in English Lessons Questionnaire.
- Teachers' and Students' Perceived Problems (challenges) of Translanguaging in English Lessons Questionnaire.
- Teachers' and Students' Perceived Prospects of Translanguaging in English Lessons Questionnaire.
- Structured Interview for Teachers and Students.

The instruments are identical for both teachers and students. All the instruments were self-constructed by the researchers. The teachers' and students' perceived awareness Questionnaire is a five-point Likert scale ranging from 1-5 with the following response options: 1-strongly disagree, 2-mostly disagree, 3-undecided, 4-mostly agree and 5-strongly agree. The instrument consists of seven items. In scoring the questionnaire, the values were reversed for negative items.

The teachers' and students' perceived problems (challenges) of translanguaging Questionnaire is a five-point Likert scale ranging from 1-5 with the following response options: 1-strongly disagree, 2-mostly disagree, 3-undecided, 4-mostly agree and 5-strongly agree. The instrument is made up of six items. In scoring the responses, the values were reversed for negatively worded items. Similarly, the teachers' and students' Questionnaire on perceived prospects of translanguaging in English lessons consists of nine items in a five-point Likert Scale ranging from one to five with the same response options and values as the awareness and problems Questionnaires describe earlier. The scoring also followed the same pattern.

The questionnaires were trail tested for reliability on 90 participants (40 teachers of English and 50 SS2 students). The data analysis for each questionnaire yielded the following Cronbach's Alpha Coefficients: Questionnaire on awareness .597, perceived problems questionnaire .573 and perceived prospects questionnaire. 645.

Method of Data Analysis

Data were analyzed using descriptive statistics of means and standard deviation (SD) for teachers and students for each item and for the whole scale. Furthermore, a one-way analysis of variance (ANOVA) to find out if there is a significant difference between the views of teachers and students for individual items and for the whole group. Data from structured interview were content analyzed.

Results and Discussion

Teachers and students were required to express their level of awareness of translanguaging approach in ESL teaching and learning, identify

problems/challenges in using the approach and assess the prospects for success/failure in using translanguaging in ESL classrooms. The results were analyzed separately for each of the two scales for the whole group (teachers and students).

Teachers' and Students Perceived Awareness of Translanguaging in ESL Lessons

Research Question 1: What are the levels of:

- Teachers' perceived awareness of translanguaging in ESL Classroom?
- Students' perceived awareness of translanguaging in ESL Classroom?
- Is there any significant difference between the perceived awareness of teachers and students of translanguaging in ESL lessons?

Table 1.1: Teachers and students' level of awareness of translanguaging instruction in ESL lessons scale

Items	Statement	Teachers Mean (SD)	Students Mean (SD)	ANOVA Results (p-Value)
1	I know that translanguaging makes use of only English Language)	2.75(1.71)	3.85(1.57)	0.042
2	In translanguaging lessons in English, speaking first language (Yoruba or another mother tongue) is not allowed	2.76(1.72)	4.32(1.25)	0.299
3	The use of the native language such as (pidgin English, Yoruba, Igbo etc) is punished in translanguaging English lessons	2.27(1.57)	1.78(1.30)	0.165
4	I know that in translanguaging in English lessons, the teachers encourage students to use their native language to express themselves	2.73(1.67)	1.87(1.33)	0.791
5	I have not heard or known about translanguaging as a	1.88(1.30)	1.61(1.08)	0.388

	way of teaching English or any other subject in the school			
6	What I know very well is that only English can be used to teach the English effectively	3.35(1.70)	4.46(1.06)	0.837
7	I know that translanguaging in English lessons does not allow the use of any native language	3.08(1.64)	3.93(1.53)	0.445
	Perceived Awareness of Teachers and Students (Whole Scales)	2.68(1.61)	3.11(1.30)	0.423

Table 1.1 showed the following:

In general, both the teachers and students manifested low level awareness of translanguaging approach in ESL lessons. This is suggested by the whole scale mean score of teachers and students (2.83 and 3.11) respectively. Though students have a slightly higher mean score, it was not significant. However, neither the teachers nor the students demonstrated strong agreement with the statements as the whole scale means are close to 3.00 approximately which represents undecided.

R. Q 1(b): Students have the highest mean score on items two and six (4.32 and 4.46) which sought their agreement with languages used in translanguaging in English. Their response which is close for mostly agree indicates their poor understanding and awareness of what translanguaging is about. In item five, teachers and students recorded the lowest mean score (1.88; 1.61) respectively. This tests students' and teachers' knowledge /having heard of translanguaging as a way of teaching English or any other subject in the school. Their response which is close to mostly disagree indicates a low awareness of translanguaging instruction.

R.Q 1 (c): is there any difference between the perceived awareness of teachers' and students' of translanguaging in ESL lessons?

Table 1.1 revealed that there is no significant difference between teachers and students perceived level of awareness of translanguaging in ESL lessons (Whole-scale mean 'teachers' 2.68; students' 3.11) $p > 0.05$.

Thus, the results indicate that both teachers and students have low awareness of translanguaging in ESL lessons. However, students have a slightly higher awareness which is not significant.

Thematic Analysis of Interview question 1.

Teachers and Students awareness of translanguaging as an approach to language teaching

The participants were asked if they have ever heard of the word translanguaging and if yes, what does it means to them. The qualitative results show that a considerable number of respondents are not aware of the word translanguaging, even those who said yes, confused translanguaging for code-switching. This reveals that most students and teachers are not fully aware of the word 'translanguaging' as a new approach to language teaching. This is evident in the responses below:

Respondent 1: I belief translanguaging is the ability to switch from one language to another either from pidgin to English or Yoruba. (Student)

Another respondent: yes, it means using both English and native language while teaching in the classroom. (Student)

Also another respondent:

'Yeah, I have heard of it. It is like mixing two or more languages to explain things better. I know about it through the introduction on the questionnaire I filled.' (Student)

Another respondent who is a teacher confused translanguaging for the sole use of the mother tongue in educational setting:

'Yes, in an educational setting translanguaging means using the language of the students in impacting the contents of the lesson to them.'

However, the following response from another teacher shows that the teacher is aware of the word translanguaging:

'Yes, I have heard about translanguaging. What translanguaging means to me, it is a situation where teachers use more than one language to communicate as a means of instruction to their students. So rather than just using the formal language which is the English language, the teacher uses the English language and the mother tongue of the student in order to communicate and pass knowledge more effectively.'

When further asked how the respondent knows about translanguaging. The respondent gave the following responses:

'It is a simple English word, and I mix language while teaching so it is not something new. I also read it in the brief introduction on the questionnaire I was giving to fill. I feel translanguaging is a good approach that will enable my students to learn. If I notice my students are not getting or comprehending as much as they should because of language barrier. I will bring in the language they understand to explain that concepts.' Respondent 6 (teacher)

Another respondent also claims:

‘Yes, I first heard it in school. It is a method that encourages student to learn English language using their own native language. Most times when you are teaching English language you will notice that they do not really understand because they do not have the knowledge of that content in their native language. So, by using translanguaging you are helping them learn the four basic language skills and ability to learn. It helps them to understand what you are teaching them in English language. For instance, let me use the topic verb (which is an action word). They may not understand the perspective of the lesson but when you translate it in Yoruba e.g jump (to ban fo soke) it is an action word because you are performing an action. It helps them to understand that she is referring to oro ise which is verb in English language.’ (English teacher)

This respondent also agreed with the last respondent:

‘From the introduction from the questionnaire, yes, I do. Personally, I love it and I have been using the technique in my classes. A lot of students do not really understand the contest of the English language expect you explain it to them in the native language or other languages they know better. So, they will be able to translate it back to English language having that residual knowledge.’ (Female teacher)

Lastly, this respondent gave the following response:

‘Yes, I want to use myself as a case study. While I was in N.C.E, I was taking English language and Yoruba. Then most times when a topic is been taught in English language, when you look at the content of the English language and the Yoruba language, I will go back to my hostel then place the context of the English language and Yoruba language side by side. I believe that it is very good using our native languages, dialects or varieties of language to teach. For instance, I’m an English teacher now if I want to draw the attention of my student or I notice that they are not getting it right or catching up, I will have to speak to them in Yoruba. Also, if a teacher is from other tribes they can also do the same in their class. I believe it is going to be effective.’

It can be deduced that only a few students understand the concept of translanguaging. They believe that translanguaging is code-mixing and code-switching which is wrong. However, the responses of their teachers reveal that some believe translanguaging is the use of the mother tongue in teaching the second language and they mostly apply these in their classrooms although some still confuse translanguaging for code-mixing and code-switching.

The results so far revealed that both students and teachers demonstrated a low awareness of translanguaging. However, the interview responses give further credence that most of the respondents (both teachers and students) confuse translanguaging for code-mixing

or code-switching which shows their low awareness of the approach. This may be due to the fact that translanguaging has not been widely propagated, researched and entrenched as an approach to instruction in the curricula of many countries especially developing ones, Nigeria inclusive (Olayoku, 2023). Thus, the interview responses show that both the students most especially the teachers use both the English language and native languages in translating instructions in English lessons. This corroborates Rasmin et al., (2023) study which reveals that translanguaging occurred in learning foreign languages in Indonesia and was effective in explaining learning materials, managing classes and clarifying the material.

RQ2: What are:

Teachers' perceived problems of translanguaging in ESL Classroom?

Students' perceived problems of translanguaging in ESL Classroom?

Is there any significant difference between the perceived problems of teachers and students of translanguaging in ESL lessons?

Table 1.2: Teachers' and Students Perceived Problems of Translanguaging in ESL Lessons

Items	Statement	Teachers Mean (SD)	Students Mean (SD)	ANOVA Results (p-Value)
1	I am familiar with the use of English only medium to teach and learn the English language and will not like the mother tongue to be used	2.17(1.55)	2.02(1.51)	0.445
2	Lack of well-known methods to be used in translanguaging in English lessons makes it difficult to use in teaching and learning English	3.51(1.46)	4.33(1.09)	0.493
3	In a classroom made of up students who speak different mother tongues, translanguaging in English lessons will be difficult to practice	3.74(1.46)	4.37(1.09)	0.031
4	Using both English and mother tongue (or another	3.33(1.45)	4.14(1.28)	0.586

	native language) in teaching and learning English will lead to transferring the way mother tongue is written spoken to that of the English language translanguageing in English lessons			
5	I welcome the use of translanguageing in English lessons	3.94(1.29)	3.98(1.58)	0.785
6	I dislike the use of other languages (translanguageing) in English language lessons	1.98(1.41)	2.07(1.48)	0.282
	Perceived Problems of Teachers and Students (Whole Scales)	3.11(1.41)	3.48(1.30)	0.423

Table 1.2. reveals the following perceived difficulties/problems of translanguageing in ESL lessons

Teachers recorded the highest mean score for item five followed by item three (3.94 and 3.74) respectively. Item five tests the extent of teachers' positive disposition to translanguageing in English language lessons. Their response is close to mostly agree, and indicates a moderate acceptance of translanguageing. Item three requires them to assess the ease or difficulty of practicing translanguageing in a class made up of students who speak different mother tongues. Their response which is close to moderately agree suggests that translanguageing will be difficult to practice in a class made up of students who speak different mother tongues

Students exhibited almost the same score on items three and two (4.37; 4.33) respectively. While item three assessed the ease of translanguageing in a class made up of students who speak diverse mother tongues, item two assessed the problem of lack of well-known methods of translanguageing. The scores which are close to mostly agree, indicate that diversity of students' mother tongue and lack of well-known methods to be used in translanguageing constitute problems or difficulties in implementing translanguageing in ESL lessons.

Both teachers and students manifested the least and almost the same mean scores for items one (2.17; 2.02) and six (1.98; 2.07) respectively. These two items assessed teachers and students'

acceptability of mother tongue and other languages apart from English in the teaching of English language. The mean scores which are close to mostly disagree suggest their unwillingness to accommodate other languages apart from English in ESL instruction.

Table 1. 2 further revealed that there is no significant difference between the perceived problems of teachers and students in translanguaging instruction in ESL lessons (whole scale mean teachers: 3.11; students: 3.48 $p > 0.05$). The results therefore reveal: Both teachers and students manifest a moderate positive disposition to translanguaging, and recognize that translanguaging will be difficult to practice in a class of students who speak different mother tongues. Teachers and students revealed a low acceptance of the use of other languages except English in ESL lessons. They also believe that lack of a known method for practicing translanguaging constitutes a problem

Thematic analysis of interview question 2.

The respondents were asked to give their perceptions on the problems or challenges that make the practice of translanguaging difficult or impossible in English lessons. The respondents gave varied challenges or problems they felt will make the use of translanguaging extremely difficult in English lessons. These are evident in their responses:

Respondent 1:

‘Like someone that is jotting down, if the teacher switch from one language to another the students might skip some words he or she does not understand in the second language. Also, does people that are not from non-Yoruba speaking states may have issues with what the teacher is saying because English is our official language. English is better than Yoruba, when a teacher switch from English to another language that might be an issue’ (student)

Also, respondent 4:

‘Translanguaging does not support education for instance our teacher is using Yoruba to teacher and most students are Igbo or Hausa in the class. It will not develop well but if we are allowed to only use the English language it will develop. It is a general language since students are been taught English language from their primary school till now. They are expected to understand the content of the language. One of the challenges is that some of us are ’not Yoruba. Sometimes we see teachers speaking Yoruba and we do not understand what they are saying. This is a challenge to us’ (student)

Another respondent reveals that:

‘yes there are challenges. Some of these challenges are various mother tongues and potential confusion between languages. I also believe that

with proper training and resources these challenges can be overcome'.
(Student)

While another respondent reveals that:

Yes, there are challenges. Some teachers don't like it; exams are only in English language and sometimes it wastes time. (Student)

The teachers also aired their views on the perceived challenges or problem associated with translanguaging in English lessons.

Respondent 7:

'yes there challenges. One major problem or difficulty is that Nigeria is a multilingual society, so in class with students from different tribes there will be problem because the teacher may not have the understanding of the Yoruba, Efik, Igbo etc. so it will be difficult even for the teacher. Because it is only a fraction of the students that understand the native language the teacher is using to explain the concepts.' (teacher)

Also, another respondent submits:

'It has not been easy interacting with student with other languages. A lot of students are from different tribes and they speak different languages. They have issues communicating in the language of immediate environment but I think with time they will be able to separate the students into their various linguistic tribes and get other instructors that are vast in other languages. At the end of the day, they can bring them together and explain the concepts in the English language which will be better.'

Lastly, a response from another teacher:

Yes, one major problem is a situation whereby the teacher and the students have only one common language which is English language. Taking for example, during NYSC, a Yoruba man can be posted to the northern part of the country for his service. In as much as the Yoruba man cannot speak the northern language and the students cannot understand his Yoruba language; the teaching language will be limited to English language which is the only common language shared between the two parties thereby hindering the process of translanguaging. These challenges also include curriculum restrictions. The challenges can be overcome if proper training is put in place by the parties involved which include the government, teachers and students.'

It is deduced from these responses that one of the major challenges to the use of translanguaging in English lessons, is the multilingual nature of the country. Most of the classrooms are filled with students from different linguistic backgrounds and teachers who are bilingual in nature. Thus, this can hinder the use of translanguaging in English lessons. Another major reason which stems from the students is the

prestigious status accorded to the English language over other languages in Nigeria.

Besides, the result of the quantitative data shows that both students and teachers have positive dispositions to the use of translanguaging in English lessons. However, the result also reveals that the multilingual nature of the country's pose as a barrier to the effective use of translanguaging in English lessons. In addition, the qualitative results also reveal that most of the respondents especially teachers welcome the use of translanguaging as an approach to language teaching, however, it is quite difficult to practice in multilingual classrooms. This is in agreement with Libradilla (2024) study which reveals the perceived challenges in the use of translanguaging as difficulty in navigating different languages, the presence of comprehension gaps, lack of learning resources to bridge such gaps, and resistance from traditional educators. This however has been a major problem of multilingual education as highlighted by (Ekeh, 2020 & Ezeokoli et al., 2019) who believe that the negative attitude of the elite and the provisions on the language policies hamper the use of the indigenous languages in classroom settings.

It is further revealed that lack of strategies for the use of translanguaging hampers its use in English lessons. This has been the concern of Yan (2024) who submits that some of these teachers are not well-groomed in the native languages due to this; they may struggle to apportion time effectively between languages and might lose the primary aim of teaching. This is tantamount to wasting of time according to the respondents. Likewise, the Nigerian Language in Education Policy prescribes that for instruction and assessment be conducted strictly in the English language (Rajendram et al., 2023). For instance, Nyimbili et al., (2021) study reveals that the teaching of literacy using translanguaging practices was associated with challenges like the mismatch between the language of instruction and dominant learner's familiar languages that existed in the classroom and also rigidity of the language policy which was based on monolingualism.

RQ3: What are:

Teachers' perceptions on the prospects of translanguaging in ESL Classroom?

Students' perceptions on the prospects of translanguaging in ESL Classroom?

Is there any significant difference between teachers' and students perceived prospects of translanguaging ESL lessons?

Table 1.3: Teachers' and Students Perceived Prospects of translanguaging in ESL Lessons

Items	Statement	Teachers Mean (SD)	Students Mean (SD)	ANOVA Results (p-Value)
1	Using the mother tongue and English side by side to teach the English language will increase students participation in the lesson	3.99(1.39)	4.21(1.42)	0.039
2	Teaching and learning the English language will be easier if English and the mother tongue are used together	3.91(1.32)	4.11(1.40)	0.044
3	Teaching and learning the English language using the native language and English together will increase students ability to learn the four main language skills(listening, speaking, reading and writing)	4.01(1.23)	3.31(1.76)	0.229
4	Using English and the native language to teach English lessons will not lead to improvement in teaching and students' performance in English	2.15(1.52)	1.89(1.40)	0.811
5	Students' communicative ability will be improved if translanguaging is used in English lessons	3.79(1.37)	4.06(1.49)	0.988
6	Students' will be confused if the English language is taught using the mother tongue and English during lessons	2.01(1.32)	2.01(1.47)	0.365
7	Translanguaging in English lessons gives teachers and students the chance to teach and learn English in the language	3.90(1.27)	4.21(1.30)	0.027

	they already know			
8	Teachers and students needs to be prepared before translanguaging can be successfully used in teaching and learning the English language	3.61(1.52)	4.27(1.25)	0.463
9	Translanguaging in English lessons will remove most of the difficulties teachers and students face when teaching and learning English	3.97(1.27)	4.16(1.34)	0.679
	Perceived Prospects of Teachers and Students (Whole Scales)	3.48(1.35)	3.58(1.42)	0.405

Table 1.3 indicates the following perceived prospects of teachers and students' perceptions of translanguaging in ESL lessons. The items are expected to assess teachers and students' extent of optimism or pessimism about the benefits or disadvantages of translanguaging in ESL lessons.

(a) Teachers recorded the highest mean score for item three (4.01), followed by one (3.99) and nine (3.97).

Item three expresses belief that translanguaging will lead to increase in students' ability to learn the four main language skills (listening, speaking, reading and writing). Their score which corresponds to mostly agree indicates that teachers are moderately optimistic that translanguaging will lead to increase in students' capacity to learn the four major language skills. Similarly, teachers score on item one which is close to mostly agree, suggests that the use of mother tongue alongside English in translanguaging in English lessons will increase students' participation in the lessons. Besides, item nine, is moderately optimistic that translanguaging in English lessons will remove most of the difficulties teachers and students face when teaching and learning English. Both teachers and students, manifested the same mean score for item six which is also the lowest mean score for teachers. Item six expresses the belief that students will be confused if English is taught using the mother tongue and English. The score which is close to mostly disagree suggests that both teachers and students are doubtful about the positive effect of translanguaging instruction in English.

(b) Students recorded the highest mean score for item eight (4.27) followed by items one and seven (4.21) each, and item nine (4.16). Item eight assesses the need for teachers and students to undergo some preparation before translanguageing can be successfully used in teaching and learning English. The score which is close to moderately agree suggests that teachers and students need some preparation to be able to use translanguageing effectively. Item seven which assesses the importance of knowledge of one's mother tongue in learning, has a score of 4.21 which is close to mostly agree, reveals that students moderately believe that mother tongue will enable effective learning of English. Students recorded their lowest score for item four, which states the belief that using English and mother tongue to teach English will not improve teaching and learner performance. The score which is close to moderately disagree shows the students moderate belief in the success of translanguageing.

(c). The students recorded a slightly higher whole scale mean score than the teachers. However, there was no significant difference between teachers' and students perceived prospects of translanguageing in ESL lessons (teachers' whole scale mean: 3.48; students' 3.58; $p > 0.05$). Both teachers and students are moderately optimistic about the use of translanguageing to enhance the teaching and learning of English language

Thematic Analysis of Interview question 3.

The respondents were further asked about the perceived prospects of translanguageing. They were asked if they believe that translanguageing will make English language teaching and learning better. These are their responses:

Respondent one submits:

'Yes, it is a good thing because there are some people that are physically challenged and the language, they understand could be Yoruba, Igbo or Hausa because not everyone is from the same race. So, translanguageing is better if we use it in most schools because it accommodates varied linguist needs of students.' (Student)

Also, respondent 2:

'Yes, for people that understand the native language the teacher is using, it will help them to increase their learning ability.' (Student)

Respondent 3:

'Yes, it really helps. It makes lessons clearer, helps student relax and connect English with what we already know now. However, students may depend on their first language and slowdown in speaking pure English. it is most suitable for teaching vocabulary, grammar rules and reading.' (Student)

The last respondent also submits

‘Yes, I believe because it really helps me. When I use translanguaging, I don’t forget and when I read on my own, I remember what I have read so far. It enhances understanding, it enables me to grasp difficult concepts better when explained using the mother tongue or familiar languages. It has its disadvantage some students may not like it because they can only assimilate with English language.’

The respondent further mentioned the aspects of English language that is most suitable to teach and learn using translanguaging.

‘Reading comprehension passage when using the mother tongue helps me to understand the words that are difficult. Also, vocabulary development, when a teacher gives examples of words that are difficult and also explains them in Yoruba, the students will be able to assimilate what the teacher is trying to pass across.’ In general, translanguaging is helpful.’ (student)

While respondent 4 submits:

‘There are some benefits and some disadvantages of using this approach. Some will understand and some will not understand.’

The teachers also gave their views on the perceived prospects of translanguaging

Respondent 1:

‘Using translanguaging where there is a particular tribe makes the teaching effective because it passes the necessary information to the students. For instance, if you ask the students questions on any topic, with our experience with the students here, you will see that some of them know the question but don’t know how to express themselves. However, when you ask them to use their mother tongue (Yoruba) they will respond brilliantly. It is good to practice translanguaging. It will make the content simple but in setting whereby there are diverse tribes it will not be possible.’

Respondent 5:

‘The benefit is that it will help them immensely like teaching them in our various dialects. It will go a very long way like I used myself as a case study, when we started this interview. Translanguaging is going to help them because majority of these students always look lost when they don’t understand what you are teaching them but when you come down to their level using translanguaging, they will be more friendly and they will show great mastery of what you are teaching them.’

Also, respondent 6:

‘Yes, it helps students understand faster and better. It also helps in promoting indigenous languages. However, in most cases it can lead to distraction in the learning process if not properly coordinated. It can be used to teach all topics.’

It can be deduced from the responses that most teachers and students consider translanguaging as an effective approach in English lesson. However, some believes that it can only be effective in a bilingual classroom while few of the students believe it may affect their proficiency in the English language.

From the findings, both students and teachers are optimistic about the use of translanguaging in the teaching and learning of the English language. The results reveal that translanguaging will enable students develop the four language skills. This is also in accordance with the findings drawn from the qualitative data:

Respondent 2:

‘Yes, I first heard it in school. It is a method that encourages student to learn English language using their own native language. Most times when you are teaching English language you will notice that they do not really understand because they do not have the knowledge of that content in their native language. So, by using translanguaging, you are helping them learn the four basic language skills and ability to learn. It helps them to understand what you are teaching them in English language. For instance, let me use the topic verb (which is an action word). They may not understand the perspective of the lesson but when you translate it in Yoruba e.g jump (to ban fo soke) it is an action word because you are performing an action. It helps them to understand that she is referring to oro ise which is verb in English language.’ (English teacher).

The respondents show positive disposition to the prospects of translanguaging in English lessons. This is in agreement with Memari (2024) study which shows that translanguaging significantly improved students’ English language skills. Likewise, Sahib (2019) study revealed that translanguaging is effective in EFL classrooms in Indonesian high schools and that teachers use translanguaging strategies in situations such as explaining materials, introducing lessons, attracting students’ attention, giving assignments and providing feedback. Translanguaging is an approach that both students and teachers find effective and useful in the teaching and learning of all aspects of the English language. To them it increases students’ participation and willingness to learn. However, this is in disagreement with Chicherina et al., (2023) study which shows that students and teacher agreed that the use of Russia should be minimized in English language teaching. Both teachers and students recognized the significance of mastering English for the career success of university graduates. This disparity may be as result of the prestigious status accorded to the English language (Rajendram et al., 2023).

Conclusion and Recommendation

There is urgent need to popularize multilingual education especially in developing countries in recognition of the pivotal role language and culture play in the education process and to strike a balance between the demands of the globalized world and the irresistible urge by nation states to preserve their linguistic and cultural identities. It is therefore suggested that government and stakeholders in education should organize conferences and workshops that will train teachers in the various indigenous languages or language of immediate environments. Clear cut strategies and methods should be designed to enhance the use of translanguaging. Furthermore, students and teachers should be sensitized on the benefits/prospects of translanguaging.

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PERCEIVED INFLUENCE OF WAGE INCREASE ON SECONDARY SCHOOL TEACHERS' WELFARE AND PROFESSIONAL DEVELOPMENT IN OYO STATE, NIGERIA

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Abstract: *Teachers' welfare remains a persistent concern in Nigeria, particularly regarding the extent to which wage increases translate into meaningful professional and financial well-being. This study examined the perceived influence of wage increase on the welfare of secondary school teachers in Oyo State, Nigeria, with specific emphasis on professional development. The study was anchored on Human Capital Theory, Expectancy Theory, and Equity Theory, and adopted a descriptive correlational survey design. A sample of 500 teachers was selected through multistage sampling from 20 public secondary schools across 10 Local Government Areas in Oyo State. Data were collected using a structured questionnaire with satisfactory reliability coefficients ($\alpha = 0.72$ for wage increase items; $\alpha = 0.83$ for welfare indicators). Data were analysed using descriptive and inferential statistics at the 0.05 level of significance. Findings revealed that teachers perceived wage increases as generally low (weighted mean = $2.22 < 2.50$ threshold). However, wage increases positively influenced short-term and classroom-related professional development activities such as attending workshops, upgrading teaching skills, purchasing instructional materials, and engaging in research. Conversely, wage increases were insufficient to significantly support long-term professional advancement, including pursuing higher academic qualifications and professional certifications. The study concludes that while wage increases enhance immediate professional engagement, they remain inadequate for sustaining long-term professional growth. It*

recommends regular, substantial salary reviews and compensation structures that better support teachers' comprehensive professional development.

Keywords: *wage increase; teachers' welfare; professional development; motivation; public secondary schools.*

Introduction

Education is widely recognized as a cornerstone of national development, and teachers serve as the primary agents through whom educational objectives are realized. Beyond transmitting knowledge and skills, teachers play a central role in shaping learners' intellectual, social, and professional growth. The effectiveness of teachers in performing these roles is closely linked to their welfare, particularly their remuneration and wage conditions. In many developing countries, including Nigeria, concerns about teachers' welfare, including wage levels, wage adjustments, and timely payment, have persisted for decades. A critical question remains: do wage increases translate into improved welfare and enhanced professional engagement for secondary school teachers, especially in states like Oyo, where teacher welfare significantly impacts educational quality?

The quality of education and academic success is largely determined by teachers. As specialists in the teaching profession, they facilitate learners' acquisition of knowledge, skills, and competencies essential for personal and societal development (Eboatu & Ozigbo, 2015). While teachers can drive positive change in students' learning outcomes, research indicates that financial incentives, including adequate wages, are crucial to sustaining teacher effectiveness (Obadara, 2014). Inadequate remuneration can constrain teachers' ability to engage in professional development, limiting the enhancement of instructional skills and overall teaching quality.

Teacher welfare encompasses both financial and professional dimensions. A key aspect of financial welfare is wage level and adjustments, which directly influence teachers' capacity to pursue professional development. Competitive and timely salaries provide teachers with the economic resources to invest in training programs, workshops, postgraduate studies, and other forms of skill enhancement. Conversely, insufficient or delayed payments reduce teachers' ability to participate in professional growth activities, potentially limiting their instructional effectiveness (Punch, 2025; Athenacentre, 2024).

In Nigeria, several studies highlight persistent gaps in the alignment between wage adjustments and professional development. Despite government interventions such as periodic salary reviews and the

establishment of structures like the Teachers Salary Structure (TSS), many secondary school teachers continue to report low satisfaction with pay, delayed salary payments, and minimal opportunities for professional advancement (Ofoegbu, 2020; Akinyemi & Olatunji, 2022). Evidence from Oyo State shows that these challenges have left a significant proportion of teachers demotivated, reducing their willingness and ability to engage fully in professional development programs (Abiogu & Ugwuja, 2016). Such findings raise concerns about the effectiveness of wage adjustments in improving teacher welfare and professional capacity.

Empirical research, both in Nigeria and internationally, supports the link between compensation and professional development engagement. Internationally, studies show that well-structured salary systems, particularly those linked to professional growth incentives, enhance teacher participation in skill-building programs and contribute to instructional quality improvements (ScienceDirect, 2020; SEAH Publications, 2025). Similarly, research in Nigerian states indicates that teachers who perceive their remuneration as adequate and fair are more likely to engage in continuous professional development, suggesting that wage increases serve as both an enabler and motivator for professional growth (RSIS International, 2024; IJHSSM, 2024).

Despite these insights, the direct relationship between wage increases and teacher welfare in relation to professional development remains underexplored in Oyo State. Most prior studies have broadly examined teacher welfare without isolating the role of wage adjustments in facilitating professional engagement. Others have focused on delayed payments or general job satisfaction without evaluating whether upward wage adjustments enhance teachers' professional capacities and skills. This gap limits understanding of how salary policies can be strategically designed to support professional growth alongside improving welfare.

This study addresses these gaps by investigating the perceived influence of wage increases on the welfare of secondary school teachers in Oyo State, with particular emphasis on professional development. By focusing on how salary adjustments impact teachers' ability and willingness to engage in professional learning activities, the study provides context-specific evidence on the wage–welfare–professional development nexus. This evidence contributes to policy discussions on the design of compensation structures that not only improve teachers' financial welfare but also enhance instructional quality through sustained professional growth.

Statement of the Problem

Teachers' professional development is widely recognized as a critical factor in improving instructional quality and student outcomes. Continuous engagement in workshops, certification programs, higher academic training, research activities, and other capacity-building initiatives is essential for sustaining pedagogical competence in secondary education. In Nigeria, secondary school teachers are expected to update their knowledge and skills regularly in response to curriculum reforms, technological advancements, and evolving educational standards. However, meaningful participation in professional development often requires financial resources.

Wage increase has traditionally been regarded as a strategy for improving teachers' welfare and enhancing their capacity to perform effectively. Improved remuneration may potentially enable teachers to invest in professional growth activities such as attending workshops, acquiring instructional materials, pursuing advanced qualifications, and participating in academic conferences. Nonetheless, wage increases do not automatically translate into professional advancement, particularly in contexts where economic pressures and rising living costs may offset income gains.

Existing empirical studies have largely examined teacher remuneration in relation to job satisfaction, motivation, productivity, and retention. While these studies provide valuable insights into the broader welfare implications of salary adjustments, limited empirical attention has been given specifically to the perceived influence of wage increase on teachers' professional development. Furthermore, there is insufficient contextual evidence focusing on secondary school teachers in Oyo State, Nigeria, where socio-economic and institutional factors may shape how wage adjustments affect professional growth.

This limited focus creates uncertainty regarding whether wage increases meaningfully enhance teachers' capacity for sustained professional development in the study area. Consequently, the problem addressed in this study is the need to empirically examine the perceived influence of wage increase on the professional development of secondary school teachers in Oyo State, Nigeria.

Research Objectives

The goal of this research is to;

1. discover teacher's perception of their wage increase and welfare in Oyo State
2. examine the perceived influence of wage increase on teachers' professional development.

Theoretical Framework

This study is grounded in Human Capital Theory, Expectancy Theory, and Equity Theory, providing a multidimensional lens to understand how wage increases may influence secondary school teachers' engagement in professional development. Together, these theories capture the economic, motivational, and social factors that shape teachers' professional behaviors and investment in their skills.

Human Capital Theory

At the heart of this framework is Human Capital Theory (Schultz, 1961; Becker, 1964), which views education and training as forms of capital investment that enhance an individual's productivity, career prospects, and economic returns. In the context of teaching, a teacher's knowledge, skills, and instructional competence represent a critical form of human capital. These capabilities can be strengthened through professional development activities such as workshops, postgraduate programs, and targeted training sessions (Hanushek, 2011).

From this perspective, wage increases serve a dual purpose. They not only provide teachers with additional financial resources to pursue development opportunities but also reduce the trade-offs associated with dedicating time and energy to skill enhancement. In essence, better pay can make professional growth both more feasible and more attractive. Contemporary research supports this idea: compensation structures that reward additional qualifications or increased responsibilities encourage teachers to remain engaged in professional learning, thereby reinforcing their human capital (Ballou & Podgursky, 2020; OECD, 2025). Wage increases, therefore, are not merely financial benefits, they are investments that can strengthen teachers' capabilities and, ultimately, improve educational outcomes.

Methodology

This study adopted descriptive survey research design to examine the perceived wage increase and its impact on the welfare of secondary school teachers in Oyo State in terms of professional development. The participants were 500 public secondary school teachers selected from twenty randomly selected secondary schools from ten local governments in Oyo State. The instrument used was Wage Increase and Teacher Welfare which comprised three sections: demographic characteristics, perceived wage increase, and teachers' welfare indicator: professional development. Reliability analysis using Cronbach's Alpha produced coefficients for perceived wage increase items (0.72) and for welfare-indicator (0.83) indicating strong internal consistency across the instrument. Data were analyzed using

descriptive statistics (frequency counts, percentages, means, and standard deviations) and inferential statistics, including Pearson product-moment correlation and regression, tested at 0.05 level of significance.

Results

Table 1: Perception of wage increase and secondary school teacher's welfare.

S/ N	Wage increase and welfare	SA	A	D	SD	Mea n	St. D
1.	My current wage level is sufficient to meet my living expenses.	68 13.6%	68 13.6%	85 17%	279 55.8%	1.85	1.10
2.	The welfare provisions for teachers in my school/state are satisfactory.	0	153 (30.6%)	347 (69.4%)	0	2.31	0.46
3.	I receive regular payment of my wages/salaries.	279 (55.8%)	85 (17.0%)	68 (13.6%)	68 (13.6%)	3.15	1.10
4	The current wage structure for teachers in my state is fair.	0	0	500 (100%)	0	2.00	0.00
5.	I am satisfied with the benefits (e.g., health insurance, pension) provided to	0	153 (30.6%)	68 (13.6%)	279 (55.8%)	1.75	0.90

	teachers.						
6.	The wage level for teachers in my state is comparable to other professions with similar qualifications .	68 (13.6%)	279 (55.8%)	153 (30.6%)	0	2.83	0.64
7.	I feel financially secure in my job as a teacher.	0	153 (30.6%)	68 (13.6%)	279 (55.8%)	1.75	0.90
8.	The current welfare provisions motivate me to perform better in my job.	0	136 (27.2%)	279 (55.8%)	85 (17.0%)	2.10	0.66
9.	Teachers' welfare is a priority in my school/state.	68 (13.6%)	136 (27.2%)	296 (59.2%)	0	2.54	0.72
10.	I am satisfied with the overall compensation package for teachers in my state.	68 (13.6%)	85 (17.0%)	68 (13.6%)	279 (55.8%)	1.88	1.12
Weighted Mean= 2.22; Threshold=2.50							

Table 1 shows that the level of teachers perceived wage increase was low because the weighted mean of 2.22 is below the threshold set at 2.50. However, the participants showed higher perception regarding item 3 - I receive regular payment of my wages/salaries (mean=3.15), items 6 - The wage level for teachers in my state is comparable to other professions with similar qualifications (mean=2.83) and item 9 -

Teachers' welfare is a priority in my school/state (mean=2.54), which yield mean values that were greater than the threshold. This result implies that despite low perception of wage increase among the teachers, the reported regular payment of their salaries, that their wage level is comparable to other states' and that their school/state prioritized their welfare.

Table 2: Perceived Influence of Wage Increase on Teachers' Professional Development

S/N	Wage increase and Professional development	SA	A	D	SD	Mean	St.d
1	Wage increase enables me to attend professional workshops	0	438 (96.6%)	17 (3.4%)	0	2.97	0.18
2	Wage increase enables me to pursue higher academic qualifications.	68 (13.6%)	85 (17.0%)	347 (67.4%)	0	2.44	0.72
3	Wage increase enables me to afford professional certification programmes.	0	136 (27.2%)	347 (69.4%)	17 (3.4%)	2.24	0.50
4	Wage increase enables me to commit more strongly to my professional growth.	0	136 (27.2%)	364 (72.8%)	0	2.27	0.45
5	Wage increase enables me to	136 (27.2%)	364 (72.8%)	0	0	3.27	0.45

	upgrade my teaching skills.						
6	Wage increase enables me to purchase instructional materials.	347 (69.4%)	68 (13.6%)	85 (17.0%)	0	3.52	0.77
7	Wage increase enables me to engage more actively in research activities.	0	432 (86.4%)	68 (13.6%)	0	2.86	0.34
8	Wage increase enables me to participate in conferences more frequently.	0	136 (27.2%)	347 (69.4%)	17 (3.4%)	2.24	0.50
9	Wage increase enables me to invest in self-development courses.	0	221 (44.2%)	279 (55.8%)	0	2.44	0.55
10	Wage increase enables me to enhance my long-term career growth.	68 (13.6%)	85 (17.0%)	347 (69.4%)	0	2.44	0.72
Weighted Mean: 2.67, Threshold: 2.50							

Table 2 presents the perceived influence of wage increase on teachers' professional development. The results indicate selective positive effects. Respondents agreed that wage increase enables them to attend professional workshops (Mean = 2.97), upgrade their teaching skills (Mean = 3.27), purchase instructional materials (Mean = 3.52), and

engage more actively in research activities (Mean = 2.86), as these mean scores exceed the benchmark of 2.50. This suggests that improved remuneration supports immediate and practice-oriented professional development activities.

However, lower mean scores were recorded for pursuing higher academic qualifications (Mean = 2.44), affording professional certification programs (Mean = 2.24), committing more strongly to professional growth (Mean = 2.27), participating in conferences (Mean = 2.24), investing in self-development courses (Mean = 2.44), and enhancing long-term career growth (Mean = 2.44), all of which fall below the acceptance threshold. The findings indicate that wage increase enhances short-term and classroom-related professional development activities but appears insufficient to significantly influence long-term or financially intensive professional advancement among secondary school teachers in Oyo State.

Discussion of Findings

The results of this study provide insightful evidence on the complex relationship between wage increases, teacher welfare, and professional development in Oyo State secondary schools. Overall, teachers perceived the level of wage increase as low. However, certain aspects, such as regularity of wage payment, comparability of wage levels with other professions, and prioritization of teacher welfare were rated above the benchmark. These findings indicate that although structural improvements exist, particularly in the consistency of payment and attention to welfare, the overall magnitude of wage increase is insufficient to substantially enhance teachers' welfare or facilitate extensive professional development. This aligns with studies showing that many Nigerian teachers perceive compensation as inadequate, even when payments are regular (Abiogu & Ugwuja, 2016; Ofoegbu, 2020).

From the perspective of Human Capital Theory (Schultz, 1961; Becker, 1964), the low overall perception of wage increase has implications for teachers' capacity to invest in professional growth. Human Capital Theory posits that financial resources enable individuals to pursue education, training, and skill enhancement that improve productivity and professional effectiveness. The findings suggest that while teachers can afford immediate, low-cost professional activities, their capacity to engage in higher-cost or long-term professional development, such as advanced degrees or professional certifications, remains limited. This reflects the practical constraints of insufficient remuneration on enhancing teachers' human capital.

The findings further resonate with Expectancy Theory (Vroom, 1964). Teachers reported that wage increases positively influenced participation in immediate, practical professional activities, including attending workshops, upgrading teaching skills, purchasing instructional materials, and engaging in research activities. This supports the theory's proposition that individuals are motivated when they perceive a clear link between their efforts and valued outcomes. Here, wage increases create tangible pathways for teachers to access professional growth opportunities directly applicable to classroom practice, thereby reinforcing motivation and engagement.

However, wage increases were less influential in enabling teachers to pursue long-term or financially intensive professional development activities. Activities such as pursuing higher academic qualifications, professional certification programme, committing more strongly to professional growth, and participating in conferences. This suggests that while wage increases support immediate professional needs, they remain inadequate to sustain long-term career advancement. Equity Theory (Adams, 1963) helps explain this finding: teachers may perceive that the rewards from wage increases do not sufficiently compensate for the higher cost, effort, or time commitment required for long-term professional growth. When remuneration fails to adequately recognize these investments, motivation to engage in such activities diminishes.

The selective impact of wage increases highlights the interplay between financial capacity and motivational perception. While teachers can manage short-term skill upgrades, limited salary increments constrain engagement in more ambitious professional development activities requiring substantial financial or personal investment. This partial alignment with theoretical predictions underscores that wage increases alone are insufficient; the magnitude, frequency, and structure of pay adjustments critically influence professional development decisions.

These results are consistent with international evidence demonstrating the link between teacher compensation and professional engagement. Research by OECD (2025) and Ballou & Podgursky (2020) emphasizes that competitive pay structures are associated with enhanced participation in professional activities and improved instructional effectiveness. Similarly, studies in sub-Saharan Africa (Toropova et al., 2021) show that wage-related incentives can motivate teachers to pursue skills that directly impact classroom practice, while inadequate remuneration limits engagement in more resource-intensive professional growth pathways.

In summary, this study reveals a complex relationship between wage increase, teacher welfare, and professional development. Wage increases appear effective in supporting short-term, practice-oriented professional activities, consistent with Human Capital and Expectancy Theories. Yet, their limited impact on long-term, financially demanding professional development highlights constraints posed by insufficient remuneration and perceived inequities, as described by Equity Theory. These findings suggest that to maximize the impact of wage policies on professional growth, salary enhancements should not only be regular and fair but also substantial enough to enable teachers to invest in both short-term and long-term professional development initiatives.

Conclusion

This study shows that wage increases for secondary school teachers in Oyo State have a selective impact on their professional development. Teachers reported that higher pay makes it easier for them to attend workshops, improve their classroom skills, purchase teaching materials, and engage in research. These findings suggest that when teachers feel supported financially, they are more able and willing to invest in activities that directly enhance their day-to-day teaching.

However, the study also reveals that wage increases alone are often not enough to support long-term professional growth. Many teachers still struggle to pursue higher degrees, professional certifications, or attend conferences, largely because the financial burden remains too high. In this sense, salary improvements act as a motivational boost, but without substantial and consistent increases, they cannot fully enable teachers to reach their professional potential.

These results underscore a complex connection between compensation, welfare, and professional development. Fair and regular pay helps teachers meet immediate professional needs, but meaningful, long-term growth requires stronger financial investment and recognition of the effort involved. Ultimately, improving teacher welfare through well-structured wage policies is not just about increasing salaries, it is about giving teachers the resources, stability, and motivation they need to grow professionally and, in turn, improve the quality of education in their classrooms.

Recommendations

1. The findings of this study suggest that while wage increases support short-term professional activities, they are insufficient to promote long-term professional growth. To address this, salary adjustments should be both regular and substantial enough to enable teachers to pursue

advanced qualifications, certifications, and professional conferences. Linking wage increases to professional development efforts can further motivate teachers by reinforcing the connection between effort and tangible rewards.

2. Timely and consistent salary payment is essential, allowing teachers to plan and engage in skill-enhancing activities without financial strain. In addition, broader welfare support, such as health benefits and access to professional development funding, can enhance teachers' overall well-being and capacity for growth. Finally, state education authorities should monitor and adjust compensation policies based on teacher feedback to ensure that wage structures effectively meet both financial and professional needs. Implementing these measures will strengthen teacher motivation, professional competence, and the quality of education in secondary schools.

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**SCHOOL IMPROVEMENT STRATEGIES AND
ORGANISATIONA EFFECTIVENESS OF TEACHERS IN
PUBLIC SENIOR SECONDARY SCHOOLS IN LAGOS STATE
EDUCATION DISTRICT V, NIGERIA**

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Abstract: *This study examined school improvement strategies and organisational effectiveness of teachers in public senior secondary schools in Lagos State Education District V. The purpose of the study is to examine the influence of instructional leadership on organisational effectiveness of teachers in public senior secondary schools in Lagos State Education District V. The study was guided by four research hypotheses. Relevant literatures were reviewed. Descriptive survey research design was adopted. The study population comprised all members of senior schools teaching staff in Lagos State Education District V. Simple random sampling technique was used to select 360 participants; Questionnaire was the main instrument used to collect data. The reliability of the instrument was ascertained using the test re-test technique which revealed a coefficient of 0.82. Data were analysed using descriptive and inferential statistics. Some of the major findings include Hypothesis one that there was a direct significant relationship of instructional leadership on organisational effectiveness of teachers at .607 ($p < 0.05$), Hypothesis two Decision making significantly influence organisational effectiveness at .320 ($p < 0.05$), Hypothesis three show there was a direct significant influence of staff development on organisational effectiveness at .201 ($p < 0.05$). Hypothesis*

four Communication strategy significantly influence organisational effectiveness at .740 $p < 0.05$). Based on these findings, it was recommended that teachers should be periodically trained through workshops, teachers' conference and seminars to ensure good quality teaching and learning in the schools all over the District.

Keywords: *instructional leadership, decision making, staff development, communication strategy.*

Introduction

Effective teachers are the foundation of an effective educational setting because, in the ever-changing world of education, they serve as mentors, advisors, and knowledge architects who influence their students' futures. It seems that an efficient teaching staff is necessary to successfully accomplish the objectives of education at any level. Teachers' affiliation with their schools, passion to, and efficient performance of their jobs, as well as their willingness and devotion to carry out given and allocated tasks without compromising their efforts, are all considered aspects of their organizational effectiveness. Effective teaching greatly enhances the overall worth of education (Asuquo & Okon, 2020) and helps students become morally upright and patriotic adults (Edet & Asuquo, 2019).

It seems that a high frequency of punctuality, assignment completion, classroom management skills, and involvement in school co-curricular activities are indicators of good instructors. It is expected that schools with strong management capabilities would have greater teacher effectiveness rates than those with weaker managing capabilities since school administrators oversee both human and material resources. To enhance and maintain school programs and activities aimed at accomplishing educational goals and objectives, management in the educational system entails the methodical control of available human and material resources (Edet & Asuquo, 2019).

Nonetheless, it has been shown that teachers' organizational effectiveness is deteriorating. For example, research conducted in Britain found that teachers in industrialized nations are seeing a reduction in employment quality, including less training opportunities, task discretion, and involvement in organizational choices (Green 2021). Few instructors use three or more strategies in a class, which undermines the efficacy of organizational teaching in developing nations like Nigeria, where the majority of teachers only use a small variety of teaching techniques (Udenka, 2021). Furthermore, a lot of secondary school teachers seem to be struggling with a mismatch

between their credentials and the requirements of their positions, which lowers their performance and effectiveness as instructors. Additionally, there may be a connection between decreased productivity and efficiency in the classroom and organizational silence that excludes teachers from important decision-making.

The efficiency and proficiency with which an individual performs their duties and obligations in order to meet the aims and objectives related to the teaching profession seems to be a measure of organizational teaching effectiveness. Since attaining educational goals and objectives may prove impossible without instructors performing their duties successfully, teaching effectiveness is a crucial issue to take into account.

The capacity of teachers to effectively handle a variety of instructional tasks as well as administrative duties in a classroom context is a key component of their efficacy as educators (Oparaji, Nwosu & Okeke, 2022). Effective instructors are skilled at handling important administrative duties that support a school's or educational institution's smooth functioning in addition to their main responsibility of teaching pupils. Teachers' performance is impacted by these many duties, particularly when the required school development techniques are not easily accessible. Professional development programs, curriculum improvement, instructional monitoring, resource allocation, and so forth are a few of these improvement measures.

The poor organizational teaching efficiency among instructors has been attributed to a number of variables by several researches. For instance, one of the main causes of teachers' worse work performance is low self-efficacy. According to Apeh, Usman, and Idris (2020), teachers' capacity to function well in secondary schools is severely hampered by high levels of occupational stress. Additionally, Akporehe and Asiyai (2023) found that poor teacher performance was a result of a lack of chances for capacity-building, such as workshops and technical skill training. Furthermore, it is expected that schools with strong administrative capabilities would have more effective instructors than those with weaker managerial capabilities. Moreover, some secondary schools in Nigeria, particularly in Lagos State, have been experiencing low ebb of teaching effectiveness due to inadequate school improvement strategies.

School improvement strategies are any interventions aimed at enhancing teaching practices, learning environments, and overall school performance. Scholar (Fullan, 2020), observed that school improvement strategies refer to systematic actions designed to improve the quality of education in schools. School improvement strategies are designed to enhance student achievement, teacher engagement, and

school effectiveness. Teachers in Nigerian secondary schools are confronted with the problem of how to create a system of secondary education that balances the twin demands of excellence and access, and this affects their productivity. The problem of the roles of teachers and how to enhance their performance and effectiveness so as to meet up with their expectations still lingers on.

More pressing is the challenge of how to compete in the ratings of secondary schools. This is because secondary school management appears not to be yielding to upgrade teachers' skills and knowledge to meet the changing conditions due to inadequate school improvement strategies. A situation whereby teachers are not opened to the new normal (technologies and techniques such as webinar, Google classroom, adobe captive and so on) have made it difficult for them to carry on with the responsibility of producing competent and flexible workforce that would ensure all round development in the country. As a result, teachers seem ill-equipped to function optimally within the system.

Secondary school administrators may have not been forthcoming in providing the necessary strategies for teachers. If school improvement strategies are not adequate, and competition for these strategies is of concerns to teachers. For example, there is a rapid increasing number of students in the secondary schools. As a result of the large number of students, the space requirement of classroom, laboratories and workshops are hardly met. Facilities are overstretched, thus presenting a problem of rapid dilapidation in the facing of dwindling fund for maintenance. The more worrisome aspect is that the method for delivery lessons and the assumption underpinning these methods remained the same.

Statement of the Problem

Educational visionaries, curriculum and instructional leaders, discipline specialists, communication and publicity specialists, building managers, and policy requirements and initiatives are all demanded of school administrators. But the state of affairs in certain Nigerian public secondary schools, especially in Lagos State, raises questions about whether or not school officials are really meeting these standards. This can be because some instructors are seen to be incompetent at carrying out their teaching responsibilities. Because they exhibit "poor attitude to work, record keeping, tardiness to school, irregular attendance to lessons and classes, poor self-discipline, dismissive attitude towards note writing, marking attendance register, and several other unacceptable behaviors which cannot contribute to the attainment of set goals," many teachers are ineffective. The majority of instructors

have often been seen acting unfavorably toward the tasks they have been given at their schools. The researchers (Oparaji, Nwosu, & Okeke, 2022) have also noted that many teachers don't seem to have the expected attitudes toward completing the work plan, managing the classroom, teaching, assessing students, participating in extracurricular activities, and promptly preparing and releasing student results. Additionally, it seems that some of them actively engage in petty trading while attending school, which tends to divert them from providing high-quality instructional services.

It is without a doubt the duty of school administrators to make sure that instructors fulfill their given tasks in a satisfactory manner. However, by failing to develop solutions that would enhance schools, the majority of school administrators seem to be lacking in administrative competence. The unpleasant circumstance necessitates that school administrators enhance their management techniques in order to stop this depressing predicament before it starts. Principals are required to significantly enhance their schools as institutional leaders in order to handle the aforementioned issues in the secondary school system. It is against this background that this study examined school improvement strategies and organisational effectiveness of teachers in public secondary schools in Lagos State.

Research Hypotheses

The following research hypotheses were tested to guide the study:

H₀₁: Instructional leadership has no significant relationship with organisational effectiveness of teachers in public senior secondary schools in Lagos State Education District V.

H₀₂: Decision-making has no significant relationship on organisational effectiveness of teachers in public senior secondary schools in Lagos State Education District V.

H₀₃: Staff development has no significant relationship on organisational effectiveness of teachers in public senior secondary schools in Lagos State Education District V.

H₀₄: Communication strategy has no significant relationship on organisational effectiveness of teachers in public senior secondary schools in Lagos State Education District V.

Concept of School Improvement Strategies

School improvement strategies refer to systematic actions designed to raise the quality of instruction in classrooms. Curriculum changes, teacher training programs, infrastructure development, the distribution of resources, leadership philosophies, and student involvement projects are a few examples of these tactics (Fullan, 2020). Comprehensive

school development initiatives that incorporate all stakeholders are essential for creating a productive learning environment, according to international research. Improving processes and building ability to consciously enhance student outcomes are the goals of school improvement. At the improvement process, schools may choose to concentrate on a variety of outcomes, such as student health and wellness, academic success, and engagement and pleasure of learning. Finding areas that need improvement and prioritizing them using high-quality, data-driven, and evidence-based procedures are crucial. When contextualized to the requirements of the school and adapted to its established priorities, the effect of the many methods to school development may be maximized (OECD, 2016).

The School Improvement Process

Schools are intricate and varied environments. Despite having the same objective of increasing student outcomes and school procedures, each will approach this differently depending on their own goals and particular situation. There is thus no one-size-fits-all approach that schools may use to enhance their operations. Success cannot be ensured by just taking tactics and remedies from other settings and applying them without making the necessary data-informed adjustments. Research indicates that treatments that are imported or prepackaged are far less effective than those that are tailored to the requirements and culture of a school (Harris & Jones, 2022).

School improvement is a complicated, multilayered, and multifaceted process that occurs over time, requires a variety of support elements, and necessitates action in several domains, according to an expanding body of data (Waite, 2013). By stringent, evaluative, and data-informed procedures, the school community should correctly decide what to concentrate on and how improvement will be carried out. It is not necessary to concentrate on or execute every feature and activity simultaneously. Schools are intricate and varied environments. Despite having the same objective of increasing student outcomes and school procedures, each will approach this differently depending on their own goals and particular situation. There is thus no one-size-fits-all approach that schools may use to enhance their operations. Success cannot be ensured by just taking tactics and solutions from other settings and applying them without making the necessary data-informed adjustments. Research indicates that treatments that are imported or prepackaged are far less effective than those that are tailored to the requirements and culture of a school (Harris & Jones, 2022).

School improvement is a complicated, multilayered, and multidimensional process that occurs over time, requires a variety of support elements, and necessitates action in several domains, according to an expanding body of data (Waite, 2021). Through rigorous, evaluative, and data-informed procedures, the school community should correctly decide what to concentrate on and how improvement will be carried out. It is not necessary to concentrate on or execute every feature and activity simultaneously.

Concept of Organisational Effectiveness of Teachers

Teachers' affinity with their schools, attachment to, and efficient performance of their jobs, as well as their willingness and devotion to carry out given and allocated tasks without compromising their efforts, are all considered aspects of their organizational effectiveness. Employees become effective when they take ownership of the results of their labor (Ekpoh & Asuquo, 2018). Their efficacy greatly enhances the whole worth of education (Asuquo & Okon, 2020) and helps pupils become morally upright and patriotic adults (Edet & Asuquo, 2019). A high frequency of promptness, the completion of tasks, lesson preparation consistency, classroom management skills, lesson content quality delivery, timely student assessment, efficient exam administration and coordination, timely preparation and issuance of student results, and participation in school co-curricular activities are all indicators of effective teachers (Arop, Owan & Ekpang, 2018b; Owan, 2018; Owan et al., 2019). Effective teachers in the aforementioned categories are crucial to the school because they support both strong student academic achievement (Ngussa & Gabriel, 2017; Robert & Owan, 2019) and institutional effectiveness (Bassey, Owan, & Eze, 2019). It is expected that schools with effective administrative ability would have better rates of teacher effectiveness than those with less managerial capacity since principals are both managers of people and material resources (Mbon, 2020; Owan, 2018; Sharma, 2015). To enhance and maintain school programs and activities aimed at accomplishing educational goals and objectives, management in the educational system entails the methodical control of available human and material resources (Edet & Asuquo, 2019).

Empirical Review

Decision Making and Teaching Effectiveness

Employee participation in management decision-making processes involves selecting from among the several possible courses of action required to address current organizational issues. The practice of participatory decision-making differs from the conventional form of

decision-making, which is authoritarian and dictatorial. Ngussa and Gabriel (2017) conducted research in Arusha City, Tanzania, comparing the dedication of teachers and their involvement in decision-making in public and private secondary schools. One of the findings from the data analysis was a strong correlation between instructors' dedication and their involvement in decision-making. The findings also showed that instructors at private schools were more dedicated to and involved in decision-making than those in public schools. According to research conducted in Botswana by Mosheti (2013), letting teachers participate in decision-making makes them happier and more dedicated to the organization's objectives. Wadesango (2017) found that instructors did not have a major role in making decisions. This indicates that school administrators made the majority of the choices and then gave them to the teachers to carry out. The research also linked teachers' poor work satisfaction and organizational commitment to their little involvement in school decision-making about important topics.

Staff Development and Teaching Effectiveness

A popular idea in management literature is staff development, which refers to both internal and external factors that motivate employees to boost their output. Frequent staff development encourages instructors to be happy while teaching and changing students' behaviors (Owan et al., 2020; p. 4159). School administrators also need to know what drives instructors to do the least amount of work possible. Promotion has a favorable and considerable impact on teachers' dedication, according to Olurotimi (2015). indicating that there was a statistically significant relationship between the instructors' dedication and the incentive scheme. However, the efficacy of teachers' instruction was not significantly correlated with their training and growth. In their study on the impact of job motivation on organizational commitment in the workplace, Salleh, Zahari, Said, and Ali (2016) discovered a positive correlation between the two. Along with their study's findings, they emphasized that while untrained employees contribute to absenteeism, poor performance, and other negative factors that may affect an organization's performance, employees who receive regular development show a high level of commitment to the company and love their work. According to Olurotimi et al. (2015), the dedication of instructors and staff development were statistically significant.

Among many other results, Owan et al. (2020) shown in another research that employee motivation and in-service training had an almost average impact on secondary teachers' emotional and sustained commitment. However, the participation rate was low in the normative

factor of desire to labor. Furthermore, the effect on teachers' work commitment is substantial in both the emotional and continuation elements, while it is insignificant in the normative component. In 2012, Ukpong and Uchendu looked at how staff development strategies affected the instructional effectiveness of teachers in government high schools in Uyo, Akwalbom State. The research discovered that instructors' work efficiency was significantly impacted by positive tactics. Teachers' effectiveness in both public and private secondary schools was found to be motivated by the extent to which principals in Ebonyi State make sure staff development and meetings inspire teachers.

Instructional Leadership and Teachers' Effectiveness

As role models, teachers are generally recognized to have a substantial impact on students' lives, particularly in the classroom (Donaldson, 2013; Francis & Oluwatoyin, 2019; Hallinger & Heck, 1998; Leithwood et al., 2008). Since their good classroom conduct is a key indicator of students' learning, they really have the most influence on student accomplishment out of all school resources (Creemers & Kyriakides, 2007; Donaldson, 2013; McCaffrey et al., 2003; Muijs & Reynolds, 2000; Wang & Fwu, 2007). Therefore, in order to optimize student involvement and limit misbehavior during teaching and learning, successful instructors are required to plan, direct, and regulate their classroom atmosphere (Creemers, 1994; Kyriakides et al., 2009; Muijs & Reynolds, 2017; B. P. Creemers & Kyriakides, 2006). In order to become excellent system outputs, effective instructors also help students develop a cognitive, emotional, and balanced personality as well as critical thinking, problem-solving, and collaborative abilities (Hundt, 2009). Since successful instructors encourage students to become lifelong learners, teachers expect their leaders to act in a manner that will impact their ability to provide high-quality instruction and learning to students.

Early research on principals' instructional leadership has looked at how it affects a range of school outcomes, including academic success and student learning, school effectiveness, and teacher-related outcomes, including attitude and professional development. However, the primary emphasis of this section is teacher-related outcomes since the research is mainly concerned with the efficacy of instructors. Current PIMRS research shows that principals' instructional leadership has a favorable impact on a number of teacher-related outcomes. Using the PIMRS in Oman, for example, Al-Mahdy et al. (2018) verified the significance of principals' instructional leadership in relation to teachers' dedication. They discovered that teachers' commitment is strongly and favorably

correlated with the school's purpose and atmosphere, but that the administration of the curriculum had no discernible impact on instructors' commitment. Bellibas and Liu (2018) discovered that staff regard for one another is significantly predicted by the instructional leadership of principals. Similarly, Ma and Marion (2019) discovered that teacher trust in secondary schools in Western China is directly and favorably impacted by instructional leadership methods, which include establishing a school mission, overseeing instructional programs, and creating a good learning environment. Additionally, the findings demonstrate a favorable correlation between Chinese teachers' effectiveness and instructional leadership methods in creating a pleasant school learning environment. In a similar vein, Lietal (2016) discovered that in Hong Kong, the instructional leadership of principals had a direct effect on staff trust and teachers' professional development.

Communication Strategy and Organisational Effectiveness

The act of generating or producing information, distributing it via a suitable channel, receiving it, analyzing it, and using it to guide decisions is known as communication. The capacity to persuade teachers by providing and receiving information to follow instructions aimed at achieving the school's objectives is known as communication (Ekpoh & Asuquo, 2016). Without efficient communication, no organization can successfully carry out its operations and activities (Arop, Owan, & Ekpang, 2018a; Nebo, Nwankwo, & Okonkwo, 2015). For every organization to function effectively and efficiently, communication is essential (Adeogun, Abiona, Ajayi, & Amuludun, 2017; Atambo & Momanyi, 2016; Osim & Etor, 2016). According to Owan, Ekpenyong, and Asuquo (2021), when a principal's communication style is unfavorable, teachers will act negatively toward them, which would subsequently impact their effectiveness on the job. The efficacy of secondary school teachers' jobs is impacted by the communication styles that administrators use, according to empirical research. For example, Marshall (2015) found that among other sub-variables, the correlation score for principals' communication was much higher, indicating that they had a bigger effect on secondary school teachers' commitment.

Wang (2011) investigated the functions of work-oriented and social-emotional communication in boosting organizational commitment in the framework of the People's Republic of China. The results showed that affective commitment was positively predicted by social-emotional communication between superiors and subordinates.

Additionally, it was shown that emotional and normative commitment are strongly positively predicted by work-oriented communication.

Research Methodology

The study adopted descriptive survey research design. This was to describe systematically the fact and characteristics of the population under study and as well accurately considering the research questions. . This design was considered appropriate for this investigation because it made it possible for participants to provide personal opinions about phenomena being investigated, using various instruments such as questionnaire and/or checklist (Bernard & Bernard, 2012).

Education District V of Lagos State is one of the six Education Districts in Lagos State. In order to ensure an effective administration of education in Lagos State, the state government divided the state into six Education Districts. Education District V is made up of four zones which include Ajeromi-Ifelodun, Amuwo-Odofin, Badagry and Ojo. Ajeromi-Ifelodun, zone had twenty-one senior secondary schools Amuwo-Odofin, zone had twenty senior secondary schools, Badagry zone has seventeen senior secondary schools while Ojo zone was made up of fifteen senior secondary schools, making a total of 73 senior secondary schools in the Education District.

The study population comprised all members of teaching staff in the 73 public senior secondary schools across Educational District V. There were altogether 1,601 members of teaching staff in Educational District V. (Educational District V Report, 2025).

The sample size of this study was 360 participants from. Multi-stage sampling procedure was used to select 360 participants for the study. First, Lagos State was divided into six strata based on Educational Districts. Simple random sampling technique was used to select one Education District. (Education District V), this is to give all the Education Districts equal right of being selected. Education District V has 1,601 members of teaching staff (Educational District V Report, 2025). Education District V is made up of four namely zones: Ajeromi-Ifelodun, Amuwo-Odofin, Badagry and Ojo. Stratified random sampling technique was used at the second stage to select six public senior secondary schools from each of the four zones. This means, the study selected 24 public senior secondary schools from Education District V. Simple random sampling technique was used at the third stage to select 15 teachers from each of the selected 24 public senior secondary schools. This brings the total number of teachers who participated in this study to 360 representing 10% of the total population.

The research instrument used to elicit information from the participants was self-structured questionnaire titled “School Improvement Strategies and Organisational Effectiveness of Teachers Questionnaire (SISOETQ). The questionnaire was divided into two sections A and B with a total of 30 items. Section A elicits demographic characteristics of the participants, while Section B sought information on each of the school improvement strategies namely: use of instructional leadership, staff development, decision-making, and communication.

The questionnaire was structured on a four-point scale of Strongly Agree (SA), Agree (A) Disagree (D) and Strongly Disagreed (SD) weighted 4, 3, 2 and 1.

The reliability of the instrument was determined by the use of the test-retest technique through its administration on 20 participants who was not involved in the main study. This was done twice within two-week interval. The scores of the two responses were correlated using the Cronbach Alpha reliability co-efficient correlation. The internal consistency of the instrument yielded reliability coefficients of 0.82. This implied that the degree of reliability coefficient is highly reliable.

The researcher went to the schools and familiarized herself with the school management and also inform them about her mission. After a week the researcher went back to administer the questionnaire across the schools. This gave room for effective administration and retrieval of the research instrument. The research administered 360 copies of the instrument for a period of two weeks; 356 copies of the instrument were correctly filled and returned. This represents 99% return rate which was considered enough for the study. Pearson Product Moment Correlation was used to test the hypothesis at 0.05 level of significance.

Results

Hypothesis One: Instructional leadership have no significant influence on organisational effectiveness of teachers in public secondary schools in Lagos State.

Table 1: Instructional Leadership and Organisational Effectiveness.

Variables	Mean	SD	Df N	r-cal	p-value	Decision
Instructional Leadership	13.90	1.65	356			H ₀ rejected
			354	.607	.000	

Organisational 14.97 .912
Effectiveness

P< (0.05)

The result of tested hypothesis on Table 1 shows that r-cal value (.607) is significant ($p = .000 < 0.05$). This means that instructional leadership have significant influence on organisational effectiveness of teachers. Therefore, the null hypothesis is rejected at 0.05 level of significance

Hypothesis 2: Decision making have no significant influence on organisational effectiveness of teachers in public secondary schools.

Table 2: Decision Making and Organisational Effectiveness

Variables	Mean	SD	Df N	r-cal	p- value	Decision
Decision making	20.80.	2.70	356			H _o rejected
			354	.320	.000	

Organisational 14.97 .912
Effectiveness

P< (0.05)

The result of tested hypothesis on Table 2 shows that r-cal value (.320) is significant ($p = .000 < 0.05$). This means that decision making have significant influence on organisational effectiveness. Therefore, the null hypothesis which stated decision making have no significant influence on organisational effectiveness of teachers in public secondary schools is rejected at 0.05 level of significance.

Hypothesis Three: Staff development has no significant influence on organisational effectiveness of teachers in public secondary schools.

Table 3: Staff Development and Organisational Effectiveness

Variables	Mean	SD	Df N	r-cal	p- value	Decision
Staff Development	18.67	3.67	356			H _o rejected
			354	.201	.000	

Teachers' 14.97 .912
Engagement

P< (0.05)

The result of tested hypothesis on Table 3 shows that r-cal value (.201) is significant ($p = .000 < 0.05$). This means that staff development has significant influence on organisational effectiveness. Therefore, the null hypothesis which stated staff development have no significant influence on organisational effectiveness of teachers in public secondary schools is rejected at 0.05 level of significance.

Hypothesis Four: Communication strategy has no significant influence on organisational effectiveness of teachers in public secondary schools in Lagos State.

Table 4: Communication Strategy and Organisational Effectiveness

Variables	Mean	SD	Df N	r-cal	p-value	Decision
Technology Training	25.90	5.05	356 354	.740	.000	H ₀ rejected
Teachers' Engagement	14.97	.912				
P< (0.05)						

The result of tested hypothesis on Table 4 shows that r-cal value (.740) is significant ($p = .000 < 0.05$). This means that communication strategy has significant influence on organisational effectiveness of teachers in public secondary schools in Lagos State. Therefore, the null hypothesis communication strategy has no significant influence on organisational effectiveness of teachers Lagos State is rejected at 0.05 level of significance.

Discussion

This result is in line with Cansoy et al.'s (2020) findings that principals' leadership fosters more cooperation among Turkish teachers, which in turn strengthens their dedication to the classroom. The authors came to the conclusion that instructors' overall commitment and effectiveness are significantly predicted by instructional leadership. These results support Marks and Printy's (2003) assertion that instructors are ready to show dedication, participate in professional development, and use creative teaching methods as soon as they learn that the principal of the school demonstrates instructional leadership practices.

Also finding from hypothesis one was in with this. For instance, analysis on tables two and six indicated participants overwhelmingly agreed that instructional leadership promotes collaboration among teachers. Enueme and Egwunyenga (2008), discovered that teachers

gave their principals excellent marks for their instructional leadership in guiding students through lessons and encouraging professional development. The findings demonstrated that administrators review teachers' lesson plans and provide guidance when needed in relation to their support of classroom teaching. Principals foster professional development by supporting and facilitating teachers' work, praising educators, and encouraging fresh ideas.

Similarly, Usman (2015), discovered that the performance of instructors and student accomplishments are significantly correlated with the principals' use of effective monitoring techniques. In their research, Agusiobo and Okonkwo (2018) concurred that supervisors' observations in classrooms and their review of teachers' professional papers had a significant impact on teachers' efficacy. These results make sense since administrators' support and encouragement for educators in their classroom teaching has a significant impact on teachers' efficacy.

The analysis from hypothesis two indicated that there is a significant influence of decision making on organisational effectiveness of teachers with mean score (2.67) at $t = .320$. ($p < 0.05$). As a result of the findings, teachers in public secondary schools see themselves as professionals who are expected to be aware of the various tasks they must undertake to contribute to the accomplishment of the secondary school's objectives. This result conformed to the findings of the following researchers who reported that a high degree of actual involvement in decisions involving teachers produce better outcome and progression in the school but low participation in management decisions showed disparity between real and expected levels of involvement revealed substantial inequality (Sarafidou & Chatziioannidis, 2013). As a result of the findings, teachers in public secondary schools see themselves as professionals who are expected to be aware of the various tasks they must undertake to contribute to the accomplishment of the secondary school's objectives.

In the context of teaching, staff development is not only about the time and effort teachers invest in their work but also about their emotional connection to their students, colleagues, and the educational process. This result was consistent with a study by Salleh, Zahari, Said, and Ali (2016), which found that while untrained employees contribute to absenteeism, poor performance, and other adverse factors that may contribute to poor organization performance, employees who receive regular development show a high level of commitment in an organization and love their work. According to Olurotimi et al. (2015), the dedication of instructors and staff development were statistically significant. Additionally, Okorie and Usulor (2016) found that a key

factor in motivating teachers' success in both public and private secondary schools is the extent to which administrators make sure staff development and meetings excite instructors. The implication of these findings is that staff development played a major role in academic career satisfaction and it gives members of academic staff to tap in the areas that are yet to be explored in order to increase their competencies as well as school improvement.

In addition, hypothesis three confirmed that staff development influence organizational effectiveness of teachers was significant at .740 ($p < 0.05$). These findings is in consonant with Ekpoh and Asuquo, (2016), who maintained that communication is the capacity to persuade educators to follow instructions that are focused on achieving the school's objectives by providing and receiving information. The reason for this is because without efficient communication, no organization can successfully carry out its operations and activities (Arop, Owan, & Ekpang, 2018; Nebo, Nwankwo, & Okonkwo, 2015). The need to overcome the obstacles that seem to be working against the organization's performance and the instructors' efficiency has made good communication essential. Based on these findings, the research came to the conclusion that excellent communication fosters positive relationships, encourages success at work, and helps organizations reach their objectives.

Conclusion

This study examined the influence of school improvement strategies on the organisational effectiveness of teachers in public senior secondary schools within Lagos State Education District V. The findings established that four key strategies instructional leadership, participatory decision-making, staff development, and effective communication have significant impacts on teachers' organisational effectiveness. Instructional leadership was shown to enhance teacher performance by providing clear direction, supervision, and support that foster effective classroom delivery. Decision-making processes, when participatory, were found to improve teacher morale, job satisfaction, and commitment to school goals. Staff development initiatives such as workshops, seminars, and mentoring significantly improved teacher competence, adaptability, and professional growth. Similarly, effective communication was identified as a critical factor in building trust, cohesion, and smooth operations within schools, thereby improving organisational outcomes.

The results confirm that schools where administrators adopt deliberate and sustainable improvement strategies record higher levels of teacher effectiveness and, by extension, better student outcomes. In essence,

school improvement strategies serve as the foundation for promoting teacher productivity, motivation, and professional commitment. Therefore, the study concludes that the organisational effectiveness of teachers in Lagos State public senior secondary schools is strongly dependent on the extent to which school improvement strategies are implemented. For lasting educational progress, school leaders, government agencies, and policymakers must prioritize and institutionalize these strategies to ensure teachers are empowered, motivated, and supported to deliver quality education.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Teachers should be periodically trained through workshops, teachers' conference and seminars to ensure good quality teaching and learning in the schools all over the district.
2. Lagos State Teaching Service Commission (TESCOM) should mandate public senior secondary school principals to always make provisions for constant development of their staff. This will help in improving the quality of their teachers and get them even more prepared to effectively discharge their duties
3. Public senior secondary schools' principals should intensify more in instructional leadership strategies for quality teaching and learning. This will help the inculcate in teachers the needed skills, capacities and competences that will help them achieve instructional effectiveness.
4. Ministry of education and other education stakeholders should encourage principals to put forward new ideas and explore new method in school improvement in order to enhance teacher's effectiveness.

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DIFFERENTIAL IMPACTS OF TEACHER-CENTERED INSTRUCTION ON PHYSICS SELF-EFFICACY: A FACTORIAL ANALYSIS OF GENDER IN NIGERIA

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Abstract: *Gender disparities in science self-efficacy are traditionally attributed to social stereotypes and socialization. However, recent evidence suggests that specific pedagogical frameworks may differentially moderate these gaps. This study utilized a quantitative two-way factorial analysis ($N = 176$) in Delta State, Nigeria, to examine the interaction between teacher-centered instruction and gender. Results identified a significant interaction effect ($F = 5.17$, $p = .007$), where teacher-centered methods correlated with substantial efficacy declines in female students ($\beta = -0.82$, $p = .003$) but had negligible impact on males. This disparate response by gender is driven by perceived classroom inclusivity, the activation of stereotypes, and attributional patterns. Female students under traditional instruction reported elevated anxiety, fixed-ability attributions, and a diminished sense of belonging. Independent research corroborates these findings: across multiple African contexts (Adler & Reed, 2018; Hazari et al., 2008), female students similarly demonstrate lower self-efficacy and achievement under lecture-based instruction while showing comparable performance when taught through student-centered approaches. Mediation analyses reveal that anxiety (Adebayo, 2018), attribution patterns (Iwuanyanwu, 2022), and classroom belonging (Mosimege, 2015) operate as key psychological mechanisms. We propose a model illustrating how lecture-based physics environments, while ostensibly neutral, create conditions that systematically undermine female efficacy. This research advances the understanding of pedagogy and motivation intersections in sub-Saharan Africa, providing a basis for gender-equitable instructional design.*

Keywords: *gender; teacher-centered instruction; self-efficacy; physics education; pedagogical equity.*

Introduction

The underrepresentation of women in science, technology, engineering, and mathematics (STEM) disciplines represents a persistent global challenge with documented economic and social consequences (UNESCO, 2017; African Union, 2015). Within Nigeria and broader sub-Saharan Africa, the problem manifests particularly acutely in physics, where female participation and persistence rates lag substantially behind male rates (Iwuanyanwu, 2022; Connolly, 2021; Biri, 2020). Historical patterns in neighboring Niger State documented by Baji (2020) reveal similar challenges: low girls' enrollment in STEM subjects, poor parental support particularly for daughters' science education, and cultural factors including preference for early marriage over extended education. These systemic barriers manifest in low female confidence and perseverance in science subjects, translating into poor academic performance despite intervention efforts. Extensive research identifies multiple contributors: societal stereotypes construing physics as masculine (Marshman et al., 2018), family socialization transmitting lower expectations to daughters (Ogumogu, 2017; Eccles, 2011), and reduced physics self-efficacy among females despite comparable performance (Dubrovskiy et al., 2022; Nissen, 2019). Abdikadyr et al. (2025) confirm this pattern: female students entered with lower achievement baselines (pre-test $M = 4.49$ vs. 6.24), with early self-efficacy differences contributing to divergence. Oyewole (2025) highlights that stereotypes about women's STEM aptitude persist even when females enroll in science courses. This aligns with Ogumogu's (2017) observation that gender stereotypes portray males as intellectually competent while females are characterized as passive and incompetent; perpetuating the view that physics is inherently masculine. These factors combine to reduce female enrollment in physics courses and careers, ultimately limiting the diversity of the STEM workforce.

However, emerging research suggests that institutional and pedagogical factors may play an underappreciated role in amplifying or attenuating gender gaps in physics. Kuchynka et al. (2021) demonstrated that collaborative, inclusive physics instruction increased female engagement more than male engagement, suggesting that teaching approaches differentially impact genders. Brewe et al. (2010) found that physics learning communities increased persistence among underrepresented students (disproportionately female), implying that traditional instruction may be particularly alienating for female

students. Within the Nigerian context specifically, Afolabi and Olajuyigbe (2018) compared action learning, inquiry-based, and conventional lecture strategies among secondary school physics students in Kwara State, finding that teaching method accounted for 81% of the variance in achievement outcomes. This striking finding demonstrates that pedagogy, far more than student characteristics, determines who succeeds in physics.

Extending these findings internationally, Abdikadyr et al. (2025) examined constructivist versus traditional instruction in Kazakhstan and found a significant Gender $\times$ Instruction interaction ($p = .043$): under traditional lecture-based instruction, males dramatically outperformed females ($M = 12.00$ vs. 6.83), whereas under constructivist methods, the gap virtually closed (males: 9.18 , females: 8.58). This cross-cultural replication from West Africa to Central Asia suggests that the differential impact of traditional instruction on female students is not culturally specific but reflects a structural feature of teacher-centered pedagogy itself. These findings collectively suggest that instructional approach may be a critical mechanism through which societal stereotypes translate into differential achievement outcomes.

The present study extends this emerging literature by examining whether teacher-centered instruction, which remains the dominant pedagogical approach in Nigerian secondary schools, affects the physics self-efficacy of male and female students differently. Preliminary analysis suggested an interaction effect: exposure to teacher-centered practices predicted lower self-efficacy for female students but not for male students. This paper unpacks that interaction through detailed analysis, exploring the specific mechanisms through which traditional instruction differentially impacts gender, and examining whether this pattern holds across a broader sample with more rigorous statistical methodology.

Literature Review: Gender, Pedagogy, and Science Self-Efficacy

Understanding why female students systematically underperform in physics, despite equal or superior academic preparation, requires analysis across multiple levels: individual psychology, classroom practice, institutional structures, and their interactions. The literature builds a cumulative case that existing research has identified barriers but neglected pedagogical mechanisms. The present study addresses this gap.

The Fundamental Paradox: Equal Ability, Unequal Outcomes

Gender disparities in physics are not attributable to cognitive differences. Hazari et al. (2008), examining a representative sample of secondary school students, found that although female students

frequently outperformed males in science, mathematics, and English, they earned comparable or lower grades in college physics and reported lower confidence in physics-related abilities. In the Nigerian context, the present study's descriptive statistics confirm this pattern: male and female students did not differ significantly on overall physics self-efficacy (Male $M = 55.49$ vs. Female $M = 54.49$; $t(174) = .527$, $p = .599$). This pattern directly replicates findings from Baji (2020) in a study of 435 secondary school students in neighboring Niger State, where no significant gender difference in academic self-efficacy was observed (Male $M = 78.16$ vs. Female $M = 78.36$; $t(433) = -.168$, $p = .867$), despite females showing slightly higher mean self-efficacy. The gap resides not in ability but in the social and institutional contexts in which students learn.

Corroborating evidence from Imo State: Udoh (2019) found 67.5% of 869 students scored 'High Academic Self-Efficacy,' yet 19.2% failed chemistry and only 10.6% achieved excellence. This divergence between high self-reported efficacy and persistently modest achievement parallels the physics pattern: when institutional and pedagogical conditions activate female students' vulnerabilities, self-efficacy beliefs cannot translate into achievement. The replication of this pattern across two STEM subjects and two Nigerian states suggests a structural feature of Nigerian science education rather than a subject- or region-specific anomaly.

This sharpens the question: which specific conditions produce divergent outcomes for students of equal ability? The literature approaches this through six layers: psychological vulnerabilities, societal stereotypes, classroom practices, and evidence of modifiability. Each layer is necessary; none is sufficient alone. Together, they build toward an integrated theoretical model that identifies teacher-centered instruction as the structural mechanism through which societal stereotypes are translated into differential self-efficacy outcomes by gender.

Layer 1: Individual Psychological Barriers—Anxiety, Attribution, and Identity

The first layer targets psychological factors internal to the student. Marshman et al. (2018) identified a striking one-grade gap: female students earning 'A' grades reported self-efficacy levels comparable to male students earning 'C' grades. Nigerian data confirm this pattern, with female physics students showing significantly lower self-efficacy than males despite comparable achievement (Biri, 2020), while female students disproportionately attributed failure to fixed ability rather than to effort or strategy, initiating a downward motivational spiral (Iwuanyanwu, 2022). The present study's finding of no overall gender

difference in physics self-efficacy replicates Baji's (2020) pattern in Niger State, where 435 secondary students similarly showed no significant self-efficacy differences by gender despite significant achievement gaps favoring males, particularly in Mathematics. This cross-state replication within Nigeria strengthens the conclusion that gender differences in STEM self-efficacy reflect contextual rather than inherent factors. Baji (2020) provides Nigerian quantitative evidence for these patterns: among 435 secondary school students in Niger State, females demonstrated significantly greater reliance on attribution to external factors and reported lower confidence in technical subjects despite comparable overall self-efficacy, confirming that psychological vulnerabilities are not inherent but socially constructed and context-dependent.

Critically, Baji (2020) documents a pattern that mirrors the present study's paradox: while female students in Niger State demonstrated equivalent or slightly higher academic self-efficacy compared to males, they nevertheless exhibited significantly lower academic achievement, particularly in Mathematics (Male $M = 105.42$ vs. Female $M = 100.58$; $t(433) = 2.007$, $p = .045$). This divergence between self-efficacy beliefs and actual performance outcomes suggests that psychological mechanisms alone cannot account for achievement gaps; rather, institutional and pedagogical conditions must mediate the translation of efficacy beliefs into achievement.

Quantitative corroboration is provided by Udoh's (2019) study of 869 secondary school chemistry students in Imo State, where female students' attribution of success to the teacher predicted 14.7% of achievement variance ($R = .383$), compared to only 4.57% for males; luck-based attributions predicted 13.5% of female variance versus 0.46% for males. These findings indicate that female students rely more heavily on uncontrollable external factors to explain their science outcomes. In teacher-centered environments where teachers perceive female students as less capable (Ogumogu, 2017), this teacher-dependency becomes structurally disadvantageous. Baji (2020) documents this attribution asymmetry across Nigerian STEM education: females consistently attribute success to external factors including luck and teacher influence rather than personal ability, while males more readily attribute outcomes to effort and strategy. This pattern directly undermines self-efficacy development, as students who believe success depends on factors beyond their control are less motivated to persist through difficulty.

The underlying mechanism is stereotype threat (Spencer et al., 1999): awareness that one's group is stereotyped as less competent creates

performance-impairing anxiety through increased cognitive load (Osborne et al., 2014; Marshman et al., 2018). Oyewole (2025) provides direct Nigerian experimental evidence: when students were informed that a physics test typically revealed gender differences, females performed worse than equally qualified males, whereas framing the same test as gender-neutral eliminated the gap. This finding is decisive: identical competence produced different outcomes depending on stereotype salience. Baji (2020) notes that anxiety is widespread among Nigerian secondary school science students and significantly predicts achievement outcomes, with female students particularly susceptible when gender stereotypes are activated in classroom contexts.

Layer 2: Societal Stereotypes and Gender Socialization Pattern

The second layer identifies the source of these psychological vulnerabilities: pervasive gender stereotypes that cast males as intellectually competent while portraying females as passive and incompetent, entrenching the view that physics is inherently masculine (Ogumogu, 2017). Oyewole (2025) demonstrates that even when substantial numbers of female students enroll in science courses, the belief persists that women are naturally technologically illiterate. These stereotypes are reproduced through multiple channels: family socialization transmits lower physics expectations to daughters (Ogumogu, 2017; Eccles, 2011); Baji (2020) documents multiple pathways through which these stereotypes operate: family background factors including parenting styles, parents' education levels, and socioeconomic status all contribute to gender differences in STEM self-efficacy and achievement, with parental expectations toward girls' Mathematics performance particularly influential in shaping girls' course selections and career aspirations (Froehlich, 2007; Eccles, 2011). media and popular culture sustain images of physics as a male domain; and instructional materials structurally reinforce these messages. Oyewole's (2025) content analysis of 76 Nigerian science textbooks found that 63.2% of pictorial illustrations depicted males and 75.6% of 13,506 generic textbook words were male references, with females shown predominantly in service roles. The predominance of male lecturers in STEM departments further signals non-belonging to female students, creating a self-perpetuating cycle of underrepresentation.

Although stereotypes are stable, Oyewole's (2025) evidence shows performance gaps are situationally dependent, varying with pedagogical context.

Layer 3: Classroom Interaction Patterns and Gender-Responsive Teaching Practices

The third layer focuses on how classroom teaching practices give stereotypes their concrete, proximate force. Ogumogu (2017) provides empirical documentation: physics teachers more frequently direct lower-order questions to girls, assign boys the higher-order responses, and give male students laboratory leadership roles. Biraimah's (1982) longitudinal study in West African science schools found markedly differentiated teacher attitudes by gender, with female students described as 'disruptive' while males were characterized as 'responsible, hardworking and scholarly.'

These interaction patterns carry direct consequences for learning. Ogumogu (2017) records female students' accounts of being persistently overlooked during laboratory sessions, with teachers moving on once their male partners were satisfied regardless of whether the female students had understood. Hazari et al. (2008) provide quantitative validation, finding that male students reported greater conceptual engagement prior to laboratory work, greater experiential learning participation, and higher confidence in teacher effectiveness than female peers. Baji (2020) provides corroborating Nigerian evidence: research consistently shows that female students have lower Mathematics and computer self-efficacy despite comparable or superior overall academic performance, with gender differences favoring males in technical subjects (Mokhtar, 2015; Scherer & Siddiq, 2015). These subject-specific disparities align with broader patterns of gender-based digital divide and computer anxiety, which disproportionately affect females (Cooper, 2006; Maric, 2018). Role segregation in mixed-gender groups, whereby boys operate equipment while girls record results (Ogumogu, 2017), systematically denies female students the mastery experiences Bandura (1997) identifies as the primary source of self-efficacy. Similar patterns of inequitable interaction in South African science and mathematics settings constrained female participation by shaping academic identity and entrenching gender-based expectations (Adler & Reed, 2018). These patterns point to a clear structural enabler: teacher-centered instruction.

Layer 4: Teacher-Centered Instruction as a Gender-Biased Pedagogical Practice

The fourth layer identifies teacher-centered, lecture-based instruction as the key pedagogical mechanism through which societal stereotypes become activated in physics classrooms. This approach remains dominant in Nigerian physics education, with approximately 80% of teachers relying primarily on lecture delivery (Ogunleye, 2007, as cited in Ajaja & Ogbiku, 2024), a pattern associated with reduced student engagement and conceptual understanding in Delta State (Ajaja &

Ogbiku, 2024). Similar structural constraints appear at the university level, where large lecture formats limit meaningful interaction (Adewale et al., 2017).

Teacher-centered instruction places students in passive roles, increasing susceptibility to stereotype activation. When students are not cognitively engaged in problem solving, they become more attentive to social cues such as differential teacher attention, questioning patterns, and classroom visibility. These conditions amplify stereotype threat, which Oyewole (2025) identifies as emerging most strongly when cognitive resources are available for social comparison. In contrast, active learning environments redirect attention toward intellectual tasks and reduce stereotype salience while increasing female engagement and persistence (Kuchynka et al., 2021; Brewe et al., 2010). In Nigerian secondary schools, where Baji (2020) documents that traditional lecture-based methods predominate, female students face compounded disadvantages: passive learning environments amplify stereotype threat while simultaneously providing limited opportunities for the mastery experiences that Bandura (1997) identifies as essential for self-efficacy development.

Causal evidence supports this interpretation. Abdikadyr et al. (2025) documented a significant Gender $\times$ Instruction interaction, where males substantially outperformed females under traditional lecture instruction, but the gender gap nearly disappeared under constructivist teaching. Nigerian evidence similarly demonstrates that instructional method strongly predicts achievement outcomes. Afolabi and Olajuyigbe (2018) found teaching method accounted for 81% of achievement variance, with female students outperforming males under active learning conditions. Awodun (2020) further confirmed the superiority of problem-solving instruction over lecture methods.

Teacher-centered instruction not only fails to mitigate gender disparities but structurally reinforces them. It sustains passive cognitive conditions conducive to stereotype threat (Oyewole, 2025), enables gender-biased interaction patterns such as differential questioning and leadership opportunities (Ogumogu, 2017; Hazari et al., 2008), and limits mastery experiences central to efficacy development (Bandura, 1997). Thus, teacher-centered instruction is a structurally gendered practice with differential consequences.

Layer 5: Understanding the Psychological Pathways—Anxiety, Attribution, and Belonging

Three interrelated psychological mechanisms translate teacher-centered instruction into diminished female self-efficacy: anxiety, maladaptive attribution, and reduced belonging. First, anxiety. Adebayo (2018) demonstrated that anxiety negatively predicts academic self-efficacy

and performance, while stereotype threat increases cognitive load and anxiety (Miyake et al., 2010). Teacher-centered instruction amplifies this vulnerability by maintaining passive cognitive conditions where stereotype threat can operate. Udoh (2019) found anxiety to be widespread among Nigerian science students and significantly predictive of achievement. Consistent with these findings, female students in the present study reported significantly higher anxiety than males.

Second, maladaptive attribution patterns. Teacher-centered classrooms provide limited opportunities for mastery experiences, making it difficult for students to attribute success or failure to effort or strategy. Instead, female students are more likely to attribute difficulty to fixed ability, reflecting internalized stereotypes (Iwuanyanwu, 2022; Oyewole, 2025). Udoh (2019) quantified this pattern, showing teacher-based attribution explained significantly more variance in female achievement than male achievement. In classrooms where teachers provide unequal engagement (Ogumogu, 2017), this attribution pattern reinforces dependency and undermines efficacy.

Third, reduced sense of belonging. Mosimege (2015) found classroom climate strongly predicts motivation and engagement, with female students reporting lower belonging. Female students in Nigerian physics classrooms describe feeling invisible or excluded (Ogumogu, 2017), while male-dominated institutional environments reinforce perceptions of non-belonging (Oyewole, 2025). Teacher-centered instruction exacerbates this by maintaining hierarchical, non-collaborative structures that limit inclusion.

Together, anxiety, attribution, and belonging form an integrated psychological pathway through which teacher-centered instruction disproportionately undermines female self-efficacy.

Layer 6: Evidence That Effects Are Modifiable—The Case for Intervention

Strong evidence demonstrates that gender disparities in physics self-efficacy are modifiable through pedagogical intervention. Miyake et al. (2010) showed that brief psychological interventions significantly reduced gender achievement gaps, confirming that disparities are situational rather than inherent. Abdikadyr et al. (2025) similarly demonstrated that constructivist instruction significantly improved female achievement and reduced gender disparities.

Nigerian evidence reinforces this conclusion. Ogumogu (2017) documented that innovative science teaching methods consistently reduce gender gaps. Afolabi and Olajuyigbe (2018) reported that female students outperformed males under active learning conditions, reversing the traditional achievement pattern. Udoh (2019) further

showed that effective interventions must simultaneously address anxiety, attribution, and efficacy beliefs. These findings demonstrate that female students' lower self-efficacy reflects pedagogical structures rather than fixed ability differences. Teacher-centered instruction amplifies psychological vulnerabilities, while active and inclusive instructional approaches mitigate them. The implication is clear: gender disparities in physics self-efficacy are not inevitable but reflect modifiable instructional conditions.

The literature reviewed above has established five converging conclusions: (1) female students' lower self-efficacy is not attributable to ability differences; (2) psychological vulnerabilities, including stereotype threat, anxiety, maladaptive attributions, and reduced belonging, contribute to the gap; (3) societal gender stereotypes are the ultimate source of these vulnerabilities; (4) teacher-centered instruction activates and amplifies these vulnerabilities through specific mechanisms; and (5) the effects are modifiable through pedagogical intervention.

It is important to acknowledge that research on gender and self-efficacy demonstrates mixed and sometimes contradictory findings, which suggests that context and methodology significantly influence outcomes. Baji (2020) notes that while some studies report gender differences favoring boys, others favor girls, and still others find no differences (Verešová & Foglová, 2018). This inconsistency across studies underscores that gender disparities in self-efficacy are not universal or inevitable but rather context-dependent, shaped by specific pedagogical practices, cultural norms, and institutional structures. The present study contributes to resolving these inconsistencies by identifying teacher-centered instruction as a specific contextual moderator that differentially affects gender.

Yet a critical gap remains. While qualitative and observational studies (Ogumogu, 2017) have documented the gender-biased nature of teacher-centered instruction, and while comparative studies (Awodun, 2020; Afolabi & Olajuyigbe, 2018; Hazari et al., 2008) demonstrate that pedagogy influences outcomes, no Nigerian study has quantified the specific interaction between traditional instruction and gender regarding physics self-efficacy. Afolabi and Olajuyigbe (2018) examined a related treatment-by-gender interaction on achievement outcomes, rather than self-efficacy, and compared discrete active versus conventional strategies rather than measuring teacher-centeredness as a continuous moderator. The present study fills this gap precisely: using self-efficacy as the outcome variable, teacher-centered instruction as the continuous moderating variable, and

investigating anxiety, attribution, and belonging as simultaneous mediators.

This gap is not merely academic but practically consequential. Without quantitative evidence that differential pedagogical treatment generates differential self-efficacy outcomes by gender, policymakers cannot recognize the urgency of the problem; without identifying the specific psychological mechanisms, interventions cannot be precisely targeted. The existing literature is also geographically constrained in a critical way. Abdikadyr et al. (2025) demonstrated a significant pedagogical $\times$ gender interaction in Kazakhstan but in a non-Nigerian, post-Soviet context, measuring achievement rather than self-efficacy and without investigating psychological mediators. The present study addresses all three of these limitations simultaneously within the Nigerian secondary school context where the problem is most urgent.

Two additional unanswered questions motivate the present study. First Is the effect of teacher-centered instruction distinct in its mechanism or magnitude based on student gender? Specifically, does traditional instruction uniquely harm females, or does it universally suppress efficacy development while disproportionately affecting females because they are more vulnerable to the specific barriers it amplifies? Second, do the three psychological mechanisms operate sequentially, moving from instruction to attribution to anxiety and finally to efficacy, or do they operate in parallel with different pathways for males versus females? Resolving these questions represents the difference between knowing that pedagogy matters and understanding precisely how it matters, including which mechanisms to target and what magnitude of change pedagogical reform can achieve.

Proposed Conceptual Framework: Integrating the Layers

Drawing together the reviewed literature, we propose an integrated theoretical model specifying how teacher-centered instruction operates as a gender-biased pedagogical practice. Teacher-centered instruction creates conditions where: (1) students are cognitively disengaged from active problem-solving, leaving capacity to ruminate on stereotypes (Oyewole, 2025; Kuchynka et al., 2021); (2) teachers control who questions, what is asked, and whose contributions are valued, enabling gender biases to operate unchecked (Ogumogu, 2017; Adler & Reed, 2018); and (3) learning is structured hierarchically, limiting mastery experiences particularly for marginalized students (Bandura, 1997).

For female students, this context activates stereotype threat, amplifies inequitable gender interaction patterns (such as lower-order questions, reduced attention, and limited leadership), and restricts mastery experiences. These triggers increased anxiety, ability-based failure

attributions, and a reduced sense of belonging, all of which predict lower self-efficacy. For male students, teacher-centered instruction similarly limits efficacy development relative to active learning, but without activating the additional vulnerability factors specifically stereotype threat, biased interaction patterns, and reduced belonging that amplify the effect for females. The model therefore predicts a specific interaction: teacher-centered instruction will predict lower self-efficacy for females more than for males, operating through multiple amplified pathways for the former and a single base pathway for the latter.

Research Questions and Hypotheses

This study addresses three specific research questions that flow directly from the literature review's identified gap:

- RQ₁: Do male and female secondary school students in Delta State differ in their physics self-efficacy levels overall?
- RQ₂: Does exposure to teacher-centered instructional practices predict self-efficacy differently for male versus female students?
- RQ₃: What mechanisms explain any observed gender $\times$ instruction interaction (e.g., differences in attribution patterns, perceived belonging, anxiety, or engagement)?

Hypotheses

- H₀₁ (Exploratory): While overall male-female differences in self-efficacy may be minimal, gender will interact with teacher-centered instruction to predict self-efficacy.
- H₀₂: Female students exposed to high teacher-centered instruction will demonstrate significantly lower self-efficacy than female students exposed to lower teacher-centered instruction (negative slope).
- H₀₃: Male students will show minimal relationship between teacher-centered instruction and self-efficacy (near-zero or shallowly negative slope).
- H₀₄ (Mechanistic): Gender differences in the instruction-efficacy relationship will be mediated by differences in attribution patterns, perceived classroom belonging, and stereotype prominence.

Methodology

Participants and Sample

The sample comprised 176 secondary physics students (107 male, 69 female) from 12 schools across six Local Government Areas in Delta

State, Nigeria, representing regional enrollment trends. All participants were actively enrolled in physics curricula during data collection. Multi-stage stratified random sampling ensured representativeness, with schools randomly selected from six LGAs and students stratified by gender and class level.

Measures

Physics Self-Efficacy Questionnaire (PSE-Q; Lindström & Sharma, 2011):

The 40-item version assessed physics task confidence across five subscales using 5-point Likert scales ($\alpha = .87$).

Teacher-Centered Instructional Practices Measure (TCIPM):

A 12-item measure assessed perceptions of lecture-based instruction, teacher direction, and limited inquiry ($\alpha = .78$).

Attribution Pattern Questionnaire (APQ):

A 10-item measure assessed ability versus effort attributions for physics difficulty using 5-point Likert scales.

Perceived Classroom Belonging Scale (PCBS; Goodenow & Grady, 1997):

A 5-item measure assessed classroom belonging ($\alpha = .71$).

Physics Anxiety Scale (PAS):

A 5-item measure assessed physics anxiety ($\alpha = .73$).

Data Analysis

Primary Analysis: Two-Way Factorial ANOVA.

We conducted a 2×2 factorial ANOVA (Gender $\times$ Instruction) with self-efficacy as the dependent variable.

Post-Hoc Slope Analysis.

We conducted separate regressions within each gender to estimate slopes and test significance.

Mediation Analysis.

Using Hayes' PROCESS macro (Model 6), we tested whether attribution patterns, perceived belonging, and anxiety mediated the gender $\times$ instruction interaction.

Results

Descriptive Statistics

Male and female students did not differ significantly on self-efficacy (Male $M = 55.49$ vs. Female $M = 54.49$; $p = .599$). However, females reported significantly higher anxiety (Female $M = 3.42$, $SD = 1.19$ vs. Male $M = 2.91$, $SD = 1.10$; $t(174) = 2.78$, $p = .006$), lower classroom belonging (Female $M = 3.28$, $SD = 1.15$ vs. Male $M = 3.71$, $SD = 1.08$; $t(174) = 2.42$, $p = .016$), and greater ability-based attribution for

difficulty (Female $M = 3.64$, $SD = 0.98$ vs. Male $M = 3.12$, $SD = 1.04$; $t(174) = 3.12$, $p = .002$). Effort attribution did not differ significantly between genders.

Teacher-centered instruction scores also did not differ significantly by gender overall (Female $M = 3.58$, $SD = 0.74$ vs. Male $M = 3.42$, $SD = 0.71$; $t(174) = 1.38$, $p = .169$), indicating that male and female students perceived similar levels of teacher-centered instruction in their physics classes.

These findings align with broader Nigerian literature: higher female anxiety mirrors Oyewole's (2025) stereotype threat findings; lower belonging reflects Ogumogu's (2017) hostile environments; ability-based attributions reflect internalized stereotypes.

Two-Way Factorial ANOVA: Main Effects and Interaction

The main effect of gender was non-significant ($F(1,172) = 0.28$, $p = .599$), confirming no overall gender difference in self-efficacy. The main effect of teacher-centered instruction was also non-significant ($F(1,172) = 2.14$, $p = .145$), indicating that teacher-centered instruction alone did not significantly predict self-efficacy when averaging across genders.

Most importantly, the Gender $\times$ Instruction interaction was statistically significant ($F(1,172) = 5.17$, $p = .007$, partial $\eta^2 = .029$). This confirms the relationship differs significantly between genders.

Post-Hoc Slope Analysis

To quantify the gender differential precisely, we conducted separate linear regressions within each gender group, predicting self-efficacy from teacher-centered instruction (continuous):

Female students: $\beta = -0.82$, $t(67) = 3.12$, $p = .003$, 95% CI $[-1.35, -0.29]$. For each unit increase in teacher-centered instruction perception, female students' self-efficacy decreased by 0.82 points. This is a substantial and statistically significant negative relationship. This finding directly validates Ogumogu's (2017) observational documentation of how traditional physics classrooms systematically disadvantage female students through differential treatment, lower-order questioning, and exclusion from leadership roles.

Male students: $\beta = -0.24$, $t(105) = 1.42$, $p = .158$, 95% CI $[-0.58, 0.10]$. The slope for males was shallow and non-significant; teacher-centered instruction had minimal predictive value for male self-efficacy.

Slope difference: The slope difference ($\Delta\beta = -0.58$, $p = .023$) confirms females are disproportionately affected. This quantitative finding provides statistical confirmation of qualitative patterns documented across Nigerian physics education, where traditional pedagogical approaches create differential experiences and outcomes by gender.

Mechanisms: Mediation Analysis

We examined whether attribution, belonging, and anxiety mediated the differential effect.

Mediating Role of Ability Attribution:

For females, ability attribution significantly mediated the effect ($\beta = -0.23$, 95% CI [-0.41, -0.08]); for males, this pathway was non-significant. This mechanism validates Oyewole's (2025) theoretical framework: societal stereotypes about women's technological illiteracy become internalized as ability attributions particularly in traditional classroom environments that fail to provide mastery experiences and actively challenge these stereotypes.

Mediating Role of Classroom Belonging:

For females, belonging significantly mediated ($\beta = -0.24$, 95% CI [-0.42, -0.10]); for males, non-significant. This finding empirically validates the experiences documented in Ogumogu (2017), including the testimony of female students who reported feeling unwelcome and invisible in physics classrooms, and Oyewole's (2025) observation that male domination of STEM creates hostile environments for females.

Mediating Role of Anxiety:

For females, anxiety significantly mediated ($\beta = -0.18$, 95% CI [-0.34, -0.05]); for males, non-significant. This aligns with Oyewole's (2025) experimental evidence that stereotype threat 'directly impairs performance by increasing cognitive load' through anxiety, and that this effect is amplified in contexts where gender differences are made salient precisely what occurs in traditional teacher-centered environments.

Combined mediation:

A serial mediation model testing the chain (Instruction → Attribution → Anxiety → Self-Efficacy) was significant for females but not for males, suggesting that teacher-centered instruction triggers ability attributions, which increase anxiety, which undermines efficacy but only for female students. This mediation chain integrates the theoretical mechanisms proposed across the Nigerian literature: socialization creates stereotype vulnerability (Oyewole, 2025); teacher-centered classroom practices activate these stereotypes through differential treatment (Ogumogu, 2017); activated stereotypes trigger ability attributions and anxiety; and these psychological responses undermine self-efficacy.

Empirical corroboration for the gender asymmetry in this mediation chain is provided by a parallel Nigerian study in chemistry (Udoh,

2019). Among female students, attributing success to teacher accounted for 14.7% of variance in chemistry achievement, compared to only 4.57% among males; and self-effort attribution to failure was a stronger negative predictor for females (8.6%) than males (7.0%). This cross-subject, cross-state replication is significant: the same pattern, in which female students are more psychologically dependent on the teacher yet more negatively affected when that teacher fails them, appears not only in physics but in chemistry, not only in Delta State but in Imo State. This consistency supports the conclusion that the gendered psychological response to teacher-centered instruction reflects a structural feature of Nigerian secondary school science education, rather than an artifact of the present study's specific sample or subject matter.

Discussion

The central finding of this study is striking: teacher-centered instruction affects male and female secondary school physics students' self-efficacy with dramatically different magnitudes. While overall male and female students reported similar self-efficacy levels, exposure to high teacher-centered instruction correlated with substantial efficacy declines in female students but had minimal impact on male students. This interaction is mediated by three interrelated mechanisms: attribution patterns (ability vs. effort), perceived classroom belonging, and anxiety.

This finding integrates and extends the converging evidence from Nigerian physics education research. Where Oyewole (2025) documented gender stereotypes and their psychological effects, and Ogumogu (2017) documented gendered classroom practices, the present study quantifies the interaction between these factors. The significant Gender $\times$ Instruction interaction ($F = 5.17$, $p = .007$) with female-specific negative slope ($\beta = -0.82$, $p = .003$) provides statistical confirmation that traditional pedagogical approaches operate as gendered practices with differential consequences. Importantly, this finding is not unique to Nigeria: Abdikadyr et al. (2025) independently documented a significant Gender $\times$ Instruction interaction ($p = .043$) in Kazakhstan, where traditional lecture instruction produced a gender achievement gap of over 5 points while constructivist instruction reduced it to under 1 point. The convergence of evidence across two geographically and culturally distinct contexts, sub-Saharan Africa and Central Asia, substantially strengthens the generalizability of the present study's core finding and suggests that the gendered effects of teacher-centered instruction reflect a structural property of this pedagogical approach rather than a culturally specific phenomenon.

The results support an integrated theoretical perspective on gender, pedagogy, and efficacy. Three mechanisms appear operative:

(1) **Stereotype Salience and Social-Psychological Safety:** Teacher-centered instruction, conducted primarily through lecture exposition, maintains students in passive reception mode. In this state, female students have cognitive capacity to attend to social cues (e.g., noticing they are the minority, being called on less frequently, receiving lower-order questions). This aligns with Oyewole's (2025) experimental finding that stereotype salience moderates' performance: when gender differences are emphasized, female performance declines; when de-emphasized, performance equalizes. Traditional instruction, through its very structure and the documented patterns of differential treatment (Ogumogu, 2017), emphasizes rather than de-emphasizes gender differences.

(2) **Attribution Mechanisms:** When female students struggle in traditional classrooms, they attribute difficulties to fixed ability rather than insufficient effort or ineffective strategies. This pattern reflects the internalization of societal stereotypes documented by Oyewole (2025): the belief that women are 'by nature technologically illiterate' becomes the lens through which academic difficulty is interpreted. Teacher-centered instruction reinforces rather than challenges these attributions by providing limited mastery experiences and by treating female students as less capable (through lower-order questioning and reduced engagement, as documented by Ogumogu, 2017).

(3) **Belonging and Identity:** The mediation through classroom belonging validates the importance of feeling welcomed, valued, and respected in learning environments. The testimonies collected by Ogumogu (2017), which describe female students feeling invisible, ignored, and excluded, illustrate what reduced belonging looks like in practice. Oyewole (2025) extends this to the institutional level, showing that male-dominated STEM departments signal to female students that 'this is not for you.' Teacher-centered instruction, by maintaining hierarchical, non-collaborative structures, fails to counteract and may actively reinforce these signals of non-belonging. Research on academic staff in Nigerian universities (Adewale et al., 2017) provides an illuminating parallel. Lecturers who experienced chronic stress in passive, overcrowded teaching environments reported not only low morale and reduced productivity but observable behavioral disengagement. Most consequentially, respondents noted that even retired colleagues "often don't live long as some of them battled with some diseases which are the result of the stressful conditions, they have been subject to." If trained adult professionals with full institutional agency experience this degree of disengagement

under conditions of passive, high-pressure instruction, the consequences for adolescent female students, who lack that agency and whose vulnerabilities are specifically activated by these conditions, are not merely plausible but predicted. What Adewale et al. (2017) document as burnout and disengagement among adult educators is, at the student level, the reduction of belonging and efficacy that the present study's mediation analysis identifies as the third pathway through which teacher-centered instruction undermines female physics self-efficacy.

Context-Specific Implications for Nigerian Physics Education

This finding is particularly significant in Nigeria, where teacher-centered instruction dominates (80% prevalence; Ajaja & Ogbiku, 2024) and is actively inequitable. Ogumogu (2017) documents the mechanisms: differential questioning, reduced attention to female students, male-dominated laboratory leadership, and teacher attitudes that view female students as less capable. Oyewole (2025) documents the consequences: reduced enrollment, higher attrition, and persistent underrepresentation in physics careers.

Critically, both sources provide evidence that these patterns are modifiable. Ogumogu (2017) notes that "innovative science teaching methods" can bridge the gender gap in achievement. Oyewole (2025) documents that when stereotype threat is reduced through self-affirmation or by de-emphasizing gender differences, female performance equalizes with male performance. The present study extends this optimism. The interaction effect demonstrates that pedagogy matters; specifically, changing pedagogical approaches can effectively reduce gender disparities in self-efficacy.

Furthermore, the institutional context matters. Oyewole (2025) documents that female students who interact with female scientists are more likely to choose science careers, suggesting that role model visibility matters. The current male domination of physics teaching positions, combined with the biased and inequitable classroom practices documented by Ogumogu (2017), creates a reinforcing cycle: female students see few female physics teachers, experience marginalization in physics classrooms, develop low physics self-efficacy, and therefore do not pursue physics careers, perpetuating the lack of female physics teachers.

Practical Implications: Designing Equitable Physics Instruction

The interaction suggests design principles for equitable instruction:

Maximize Student Intellectual Agency: Move from passive lecture reception to active problem-solving. When students are cognitively engaged in solving authentic physics problems, their attention shifts

from social positioning ("Am I one of few girls?") to intellectual challenge ("How do I solve this?"). This addresses the stereotype salience mechanism documented by Oyewole (2025) and aligns with the evidence from Ogumogu (2017) that innovative methods can bridge gender gaps.

Ensure Equitable Participation and Recognition: Teachers should systematically monitor their questioning and engagement patterns to ensure equal distribution of higher-order questions, leadership opportunities, and intellectual recognition across genders. This directly addresses the differential treatment patterns documented by Ogumogu (2017), including lower-order questioning for females and male-dominated laboratory leadership. Teachers should be trained to recognize and counteract unconscious biases that lead them to attribute female difficulties to fixed ability while attributing male difficulties to insufficient effort.

Create Belonging Through Collaboration: Structured collaborative problem-solving where all students contribute substantively can counteract feelings of isolation and marginalization. This addresses the belonging mechanism identified in the mediation analysis and responds to the testimonies of exclusion documented by Ogumogu (2017). Collaboration should be carefully structured to avoid reproducing gender-stereotyped roles (boys doing hands-on work, girls recording results).

Provide Scaffolded Mastery Experiences: Bandura identified mastery experiences as the most potent source of self-efficacy. Instruction should provide multiple opportunities for all students to successfully solve progressively challenging physics problems with appropriate support. Success attributions should be directed toward effort and strategy use rather than fixed ability. This counteracts the ability attribution pattern that Oyewole (2025) links to internalized stereotypes and that the present study identifies as a mediator of the gender $\times$ instruction effect.

Increase Visibility of Female Role Models: Both in instructional materials (textbooks, examples, illustrations) and through visiting speakers or teacher recruitment, students should see evidence that physics is a field for everyone. This addresses Oyewole's (2025) documentation of male-dominated textbook illustrations and physics departments, and responds to evidence that female role models increase female students' identification with science careers.

De-emphasize Social Comparisons: Assessment and recognition should focus on individual growth and mastery rather than normative comparison ("Who got the highest score?"). Oyewole's (2025) experimental evidence shows that performance gaps emerge when

gender differences are emphasized but disappear when they are not. Instruction should avoid practices that emphasize gender categories or create competitive comparisons that activate stereotype threat.

Limitations and Future Research Directions

The limitations of the study include:

Cross-sectional design: Longitudinal research would strengthen causal claims by tracking efficacy trajectories over time.

Self-report measures: Future research should incorporate classroom observations to objectively document interaction patterns.

Sample attrition: The final sample ($N = 176$) from initial $N = 360$ remained representative, though differential attrition could introduce bias.

Regional Specificity: The sample was drawn from Delta State. While patterns documented here align with broader Nigerian research (Oyewole, 2025; Ogumogu, 2017), replication in other Nigerian states and other sub-Saharan African contexts would strengthen generalizability. Notably, however, Abdikadyr et al. (2025) independently documented a significant pedagogical $\times$ gender interaction in Kazakhstan, a culturally and educationally distinct context, suggesting that the core finding may generalize well beyond Nigeria. This cross-cultural convergence provides partial mitigation of the regional specificity concern, though direct replication within other Nigerian states remains a priority.

Future Research

The following future research should be carried out:

(1) Employ longitudinal designs tracking gender-specific efficacy development across academic years, relating trajectories to instructional experiences.

(2) Test pedagogical interventions directly: Given Ogumogu's (2017) evidence that innovative teaching methods bridge gender gaps, experimental studies comparing traditional versus reformed instruction on gender-specific efficacy outcomes are urgently needed in Nigerian contexts. Afolabi and Olajuyigbe's (2018) quasi-experimental design, which demonstrated dramatic achievement advantages under action learning and inquiry-based strategies relative to conventional lecture instruction among Nigerian secondary physics students, provides a methodological template for such intervention studies, though future work should extend this to self-efficacy outcomes and explicitly test the interaction between pedagogy and gender as a primary hypothesis. Abdikadyr et al.'s (2025) pre/post quasi-experimental design, which successfully detected significant Gender $\times$ Instruction interaction

effects on physics achievement while tracking misconception scores alongside achievement, offers an additional methodological model. Future Nigerian studies should similarly collect both achievement and self-efficacy data before and after instructional interventions, enabling direct comparison of pedagogical effects on self-efficacy trajectories by gender.

(3) Examine teacher preparation and professional development: How can pre-service and in-service training help teachers recognize and counteract gendered interaction patterns? Given Ogumogu's (2017) documentation of teacher biases and Oyewole's (2025) evidence of male-dominated physics departments, teacher education represents a critical intervention point.

(4) curriculum materials: Building on Oyewole's (2025) content analysis showing 63% male representation in textbook illustrations, systematic research should examine how curriculum materials can be revised to provide more gender-balanced representations and examples.

(5) Explore intersectionality: The present study examined gender in isolation. Future research should investigate how gender intersects with socioeconomic status, rural/urban location, and ethnicity to shape physics experiences and outcomes. Oyewole (2025) notes that 75% of females choosing science come from urban areas and 71% from educated families, suggesting that socioeconomic and geographic factors interact with gender to shape STEM participation.

Conclusions and Policy Recommendations

Teacher-centered physics instruction differentially affects male and female students' self-efficacy, reflecting systematic patterns whereby traditional approaches amplify psychological barriers disproportionately affecting females.

Converging evidence across Nigerian physics education research strengthens these conclusions: Oyewole (2025) documents the societal stereotypes and psychological mechanisms; Ogumogu (2017) documents the gendered classroom practices; and the present study quantifies their interaction. Together, these sources demonstrate that women's underrepresentation in Nigerian physics reflects systematic institutional and pedagogical practices that generate differential experiences and outcomes by gender, not differential ability or interest. Baji's (2020) study in neighboring Niger State provides critical replication: the same pattern of equivalent self-efficacy but divergent achievement outcomes appear across states, subjects, and student populations, confirming that the phenomenon reflects structural features of Nigerian secondary science education rather than local anomalies.

Adewale et al. (2017) provide a structurally important parallel: Nigerian university lecturers operating under passive, under-resourced teaching conditions exhibited deep disengagement and reduced effectiveness, outcomes produced not by individual deficiencies but by institutional failure to enable equitable practice. This analysis reinforces the present study's policy conclusions: gender disparities in physics self-efficacy will not be resolved by targeting individual teacher behaviors or student psychological vulnerabilities alone. The institutional architecture, encompassing teacher education systems, promotion incentives, monitoring mechanisms, and resource allocation, must be reformed so that gender-equitable pedagogy is structurally supported rather than contingent on individual teacher initiative.

Ogumogu's (2017) documentation of how innovative teaching bridges gender gaps, combined with Afolabi and Olajuyigbe's (2018) demonstration that active learning enabled female students to outperform male peers, confirms that pedagogy can dismantle the barriers inherent in traditional instruction. Since teaching method accounted for 81% of achievement variance (Afolabi & Olajuyigbe, 2018), and Oyewole's (2025) experimental evidence shows that reducing stereotype threat eliminates performance gaps entirely, deliberate pedagogical shifts represent a viable, evidence-based strategy for narrowing gender disparities in self-efficacy.

Policy Recommendations:

(1) **Mandate Gender-Equitable Pedagogy Training:** Pre-service and in-service physics teacher education should include explicit training on recognizing and counteracting gendered interaction patterns. Teachers should be equipped to monitor their own questioning, ensure equitable laboratory leadership opportunities, and attribute student difficulties to modifiable factors, specifically effort and strategy rather than fixed ability, as recommended by Ogumogu (2017) and supported by attribution theory.

(2) **Transition from Teacher-Centered to Active Learning:** The Nigerian physics curriculum and assessment systems should incentivize active, collaborative problem-solving over passive lecture reception. Evidence from Afolabi and Olajuyigbe (2018) in Nigeria and Abdikadyr et al. (2025) in Kazakhstan demonstrates that constructivist methods reliably narrow the gender gap in physics outcomes, with the latter confirming a significant Gender $\times$ Instruction interaction ($p = .043$) in which the female disadvantage under traditional instruction virtually disappeared under constructivist teaching. Transition requires resources and sustained professional development infrastructure. Baji (2020) documents the Nigerian context where traditional instruction predominates, creating systematic

disadvantages for female students. Policy reforms must recognize that continuing current instructional approaches perpetuates gender inequality not through explicit bias but through structural mechanisms that amplify social stereotypes and limit mastery experiences.

(3) **Reform Curriculum Materials:** Following Oyewole's (2025) documentation of gender bias in textbooks, the Nigerian Educational Research and Development Council should establish standards for gender representation in physics instructional materials, ensuring balanced illustration of male and female scientists, engineers, and students in diverse professional roles.

(4) **Recruit and Retain Female Physics Educators:** Oyewole (2025) documents the predominance of male lecturers in STEM departments. Policies should actively recruit female physics teachers and university faculty, providing mentorship and support for advancement. Visible female role models increase female students' identification with physics careers.

(5) **Establish Monitoring and Accountability Systems:** Schools and universities should track gender-disaggregated data on physics enrollment, completion, and achievement to identify disparities early and trigger timely interventions. In line with Oyewole's (2025) recommendations, collaborative engagement among universities, government agencies, and civil society is essential to fund scholarships and support programs for female physics students, ensuring accountability mechanisms that sustain long-term progress.

Achieving gender equity in physics education transcends mere fairness; it is a vital economic and development imperative for Nigeria. The underutilization of half the country's talent pool in STEM represents a loss that cannot be sustained. Grounded in converging Nigerian physics education research, this study demonstrates that gender disparities in self-efficacy are not inevitable but are products of modifiable pedagogical practices. Transforming instruction to prioritize equitable engagement, recognition, and belonging will unlock the full potential of all students, regardless of gender.

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THE IMPACT OF COMPUTERIZED APPLICATIONS ON EDUCATIONAL DECISION-MAKING QUALITY IN PALESTINE KINDERGARTENS

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Abstract: *This study examines the role of computerized applications in enhancing the quality of decision-making in Palestinian kindergartens across six domains: educational planning, financial and resource management, communication and coordination, evaluation and monitoring, administrative decision-making, and professional development. A quantitative descriptive approach was adopted. Data were collected using a validated questionnaire administered to 200 female principals from public and private kindergartens across Palestine. Descriptive statistics were used to determine the level of computerized application utilization in each domain. Results revealed a moderate level of utilization across all domains. The highest use was in professional development and communication and coordination, reflecting increased reliance on technology for teacher training and parent engagement. Lower levels were found in evaluation and monitoring and administrative decision-making, indicating areas needing development. This study provides empirical evidence on digital adoption in early childhood education management in Palestine. It highlights the need to strengthen digital infrastructure, train principals in technology use, and promote data-driven decision-making to improve administrative and educational effectiveness.*

Keywords: *computerized applications; decision-making; education; kindergarten; kindergarten principals; Palestine.*

Introduction

Early childhood education for sustainable development is the basis for achieving sustainability in all dimensions: ecological, economic, social and cultural (Šindić, 2025).

In the contemporary educational landscape, the integration of computerized applications has become pivotal in enhancing decision-

making processes across various educational levels. In early childhood education, particularly within kindergartens, the adoption of such technologies has shown promise in improving administrative efficiency, pedagogical strategies, and overall educational quality. In Palestine, the unique socio-political context presents both challenges and opportunities for the implementation of computerized applications in kindergartens, necessitating a thorough investigation into their role in decision-making processes.

Computerized applications, encompassing management information systems, digital assessment tools, and communication platforms, have been instrumental in streamlining administrative tasks and facilitating data-driven decision-making in educational settings. For instance, the implementation of digital monitoring solutions like UNICEF's RapidPro platform, rebranded as "Qudurati" in Palestine, has enabled real-time tracking of children's developmental milestones, thereby informing timely interventions and policy decisions (UNICEF, 2018). This underscores the potential benefits of extending similar applications to the kindergarten level, where decision-making processes are equally critical.

The aim of the study (Ali, 2025) is to investigate the expectations of kindergartens' principals concerning the effect of implementing AI on the roles of educational leadership. This study has identified several implications that AI will have on the leadership role.

In the realm of early childhood education, computerized applications have been associated with improved educational planning, resource management, and communication. A study by Papadakis (2021) highlighted the positive impact of coding applications in supporting young children's computational thinking and fluency, emphasizing the role of technology in enhancing learning outcomes (Papadakis, 2021). Moreover, the establishment of the Early Childhood Computer Laboratory at Rawdah University College in Palestine, as part of the EU Erasmus+ project, aims to raise the capacity of academic staff and encourage the adoption of blended learning approaches in early childhood education (Rawdah University College, 2022).

Despite the recognized benefits, the integration of computerized applications in Palestinian kindergartens faces several obstacles. A study conducted by Ali Ahmad (2020) in the Salfeet Governorate identified barriers such as inadequate infrastructure, lack of training, and limited support for teachers, which hinder the effective use of information and communication technology in early childhood education (Ali Ahmad, 2020). Addressing these challenges is essential to harness the full potential of computerized applications in improving decision-making processes.

Furthermore, the role of computerized applications extends to the professional development of educators. Continuous professional development programs focusing on technology integration have been shown to enhance teachers' self-efficacy and competence in utilizing digital tools for instructional purposes (Rich et al., 2021). In the Palestinian context, initiatives like Anera's early childhood development program provide in-service training courses to help teachers adopt child-centered teaching techniques, thereby improving the quality of education (Anera, 2022).

This study aims to explore the role of computerized applications in enhancing the quality of decision-making in Palestinian kindergartens. Focusing on six key domains—educational planning, financial and resource management, communication and coordination, evaluation and monitoring, administrative decision-making, and professional development—the research seeks to assess the extent to which these technologies contribute to more effective and informed decisions. By employing a questionnaire-based methodology targeting kindergarten principals across Palestine, the study endeavors to provide insights into current practices, challenges, and opportunities associated with the use of computerized applications in early childhood education settings.

The systematic review of (Lin et al., 2023) analyzed 31 empirical studies published between 2014 and 2020 to explore the implementation of computing technologies in early childhood education. The study identified 22 computing technologies across three types of computing environments, eight types of learning activities, various cognitive and non-cognitive learning outcomes, and a range of assessment strategies. The findings underscore the benefits of integrating computing education in early childhood settings and provide insights into designing age-appropriate computing activities.

The study of (Davoud & Bourbour, 2024) examines the concept of digital competence in early childhood education, proposing a framework for what constitutes adequate digital competence for young children. The authors discuss the roles of educators in facilitating digital competence and highlight the importance of integrating digital technologies in pedagogically meaningful ways. The study emphasizes the need for professional development to equip educators with the necessary skills to support children's digital learning.

The systematic literature review of (Emi et al., 2024) explores the integration of educational technology in early childhood education. The authors analyze various studies to identify the benefits and challenges associated with technology use in early learning environments. The review highlights the potential of educational

technology to enhance learning experiences and outcomes for young children when implemented effectively.

The study of (Papadakis, 2021) investigates the effectiveness of coding applications in developing computational thinking and fluency among young children. The findings suggest that age-appropriate coding apps can significantly enhance children's problem-solving skills and understanding of computational concepts.

The study of (Rich et al., 2021) examines the impact of continuous professional development programs on elementary teachers' confidence and ability to teach coding and computational thinking. The study concludes that targeted professional development can significantly improve teachers' self-efficacy, leading to more effective integration of computational concepts in early education.

These studies collectively provide a robust theoretical foundation for the research on the role of computerized applications in improving decision-making quality in Palestinian kindergartens. They highlight the importance of integrating technology in early childhood education, the need for educator competence in digital tools, and the positive outcomes associated with such integrations.

Through this investigation, the research aims to inform policy and practice, offering recommendations to enhance the integration of computerized applications in kindergartens, thereby improving the overall quality of decision-making and educational outcomes in Palestine.

Research Problem Statement:

In the contemporary educational landscape, the integration of computerized applications has become pivotal in enhancing decision-making processes across various educational institutions. However, in the context of Palestinian kindergartens, there exists a noticeable gap in the adoption and effective utilization of such technologies. This gap potentially hinders the ability of kindergarten administrators to make informed, timely, and strategic decisions that are crucial for the development and management of early childhood education.

While numerous studies have highlighted the benefits of computerized systems in educational settings, there is a scarcity of research focusing specifically on their impact within Palestinian kindergartens. The unique challenges faced by these institutions, including limited resources, lack of training, and infrastructural constraints, further exacerbate the problem. Consequently, there is a pressing need to investigate how computerized applications can be effectively integrated to support and improve decision-making processes in this specific context.

Addressing this research problem is essential to bridge the existing technological gap and to provide empirical evidence on the potential benefits and challenges associated with the implementation of computerized applications in Palestinian kindergartens. Such insights will be instrumental in informing policy decisions, guiding future implementations, and ultimately enhancing the quality of early childhood education in the region.

Research Objectives:

This study aims to investigate the role of computerized applications in enhancing decision-making processes within Palestinian kindergartens. The specific objectives are:

1. To assess the extent to which computerized applications are utilized in educational planning within kindergartens.
2. To evaluate the impact of these applications on financial and resource management.
3. To examine how computerized tools facilitate communication and coordination among kindergarten staff.
4. To analyze the effectiveness of digital applications in evaluation and monitoring processes.
5. To explore the influence of computerized systems on administrative decision-making.
6. To investigate the role of technology in supporting professional development for kindergarten principals.

These objectives are informed by recent literature emphasizing the integration of technology in early childhood education. For instance, (Emi et al., 2024; Davoud & Bourbour, 2024; Liu et al., 2023) conducted a systematic review highlighting the benefits of technology-integrated computing education in early childhood settings, noting improvements in communication, collaboration, and problem-solving skills among children.

Furthermore, a study by Abdel Ghani et al. (2022) focused on developing teaching practices in computational thinking in Palestine, underscoring the importance of incorporating technology to enhance educational outcomes.

In light of these findings, this research seeks to provide empirical evidence on the utilization and impact of computerized applications in Palestinian kindergartens, thereby contributing to the broader discourse on technology integration in early childhood education.

Research Methodology:**Research Design:**

This study employs a descriptive-analytical approach using a quantitative methodology. The primary data collection tool is a structured questionnaire designed to assess the extent to which computerized applications influence decision-making processes across various domains within Palestinian kindergartens. This design facilitates the collection of quantifiable data, enabling statistical analysis to identify patterns and relationships between variables.

Population and Sample:

The study population comprised all kindergarten principals in Palestine. Stratified random sampling was used to ensure representation of different regions and types of kindergartens (governmental, private, and UNRWA). The sample size was approximately 200 directors.

Data Collection Instrument:

A comprehensive questionnaire was developed, encompassing the following six domains:

Educational Planning, Financial and Resource Management, Communication and Coordination, Evaluation and Monitoring, Administrative Decision-Making and Professional Development.

Each domain included a series of statements rated on a 5-point Likert scale, ranging from “Strongly Disagree” to “Strongly Agree.” The questionnaire will be adapted from existing validated instruments, such as the Technology Acceptance Model (TAM) tailored for early childhood education settings. The instrument will undergo a pilot test with a subset of the target population to assess its reliability and validity, with necessary modifications made based on the feedback received.

Data Collection Procedure:

After obtaining the necessary ethical approvals, the finalized questionnaire was distributed to the selected sample of kindergarten principals. Data collection was conducted through both online platforms and in-person visits, depending on the accessibility and preferences of the participants. Participants were assured of the confidentiality and anonymity of their responses, and informed consent was obtained prior to participation.

Data Analysis:

Collected data was analyzed using the Statistical Package for the Social Sciences (SPSS) software. Descriptive statistics, including means and standard deviations, were calculated to summarize the data. Inferential

statistical tests, such as t-tests and ANOVA, was employed to examine differences between groups. Additionally, regression analysis was conducted to explore the predictive relationships between the use of computerized applications and the quality of decision-making across the identified domains.

Visual Representation of the Research Methodology:

Below is a flowchart illustrating the research methodology process:
graph TD:

A [Research Design: Descriptive-Analytical Approach] -->

B[Population: Kindergarten Principals in Palestine]

B --> C [Sampling: Stratified Random Sampling]

C --> D [Instrument Development: Questionnaire with Six Domains]

D --> E [Pilot Testing and Validation]

E --> F [Data Collection: Online and In-Person Surveys]

F --> G [Data Analysis: SPSS - Descriptive and Inferential Statistics]

Results:

Table (1): Means, Standard Deviations, Relative Weights, and Levels of the Items in the Educational Planning Domain

No.	Statement	Mean	Standard Deviation	Relative Weight (%)	Level
1	I use computerized applications to organize the daily schedule in the kindergarten.	2.79	1.08	55.8%	Moderate
2	Technology helps me develop weekly and annual educational plans efficiently.	3.38	0.85	67.6%	Moderate
3	Digital tools support planning for learning activities and events.	3.00	1.24	60.0%	Moderate
4	Applications make it easier to align planning with curriculum objectives.	2.69	0.98	53.8%	Moderate
5	I rely on digital platforms to document and revise educational plans.	2.87	0.98	57.4%	Moderate
	Overall Mean	2.95	0.85	59.0%	Moderate

Based on the data presented in Table (1), which indicates moderate utilization of computerized applications in educational planning within Palestinian kindergartens, the following research question is proposed:

Study Question 1:

"To what extent do kindergarten principals in Palestine utilize computerized applications for educational planning, and what factors influence their moderate adoption levels?"

The findings from Table (1) reveal that while there is some use of computerized applications in educational planning, the overall adoption remains moderate. This suggests potential barriers or limitations affecting the effective integration of digital tools in planning processes. Understanding the extent of utilization and the influencing factors is crucial for developing strategies to enhance the adoption and effective use of technology in educational planning.

Several studies have explored the integration of digital tools in early childhood education and the challenges faced:

Alkhawaldeh et al. (2017) investigated early years teachers' perspectives on the role of computer technology in supporting children's learning in Jordanian kindergartens. The study found that while teachers recognized potential advantages, there was a lack of certain understandings regarding the benefits of young children's computer use.

Ahmad (2020) examined obstacles to integrating ICT in kindergartens from the viewpoint of headmistresses in Salfet Governorate, Palestine. The study identified several first-order obstacles, including lack of supporting infrastructure and training, and second-order obstacles such as lack of teacher interest and experience.

Alomyan & Alelaimat (2021) explored the use, importance, and challenges of employing ICTs in kindergartens in remote areas of Jordan. The study highlighted that the degree of use and importance of ICTs was average, with challenges including insufficient training and resources.

These studies underscore the need to investigate the specific factors influencing the moderate adoption of computerized applications in educational planning within Palestinian kindergartens.

The moderate utilization of computerized applications in educational planning within Palestinian kindergartens, as indicated by an overall mean of 2.95 (59%) in Table (1), suggests that while there is some integration of digital tools, their adoption is not yet optimal. This partial adoption may stem from a combination of external and internal factors influencing the effective use of technology in early childhood education settings.

External Factors:

- Infrastructure Limitations: Many kindergartens may lack the necessary technological infrastructure, such as reliable internet access

and up-to-date hardware, which hampers the consistent use of digital tools.

- **Resource Constraints:** Limited financial resources can restrict the acquisition of educational software and the maintenance of existing technological equipment.

Internal Factors:

- **Professional Development:** There may be insufficient training opportunities for principals and educators to develop the skills required to effectively integrate technology into educational planning.

- **Attitudinal Barriers:** Educators' beliefs and attitudes towards technology play a crucial role. Some may be skeptical about the benefits of digital tools or may prefer traditional planning methods due to familiarity.

These observations align with findings from international studies. For instance, Blackwell et al. (2014) found that early childhood educators' attitudes towards technology significantly influence its classroom use. Similarly, Ertmer et al. (2012) highlighted that both external barriers (like lack of resources) and internal barriers (such as beliefs and attitudes) impact technology integration in educational settings.

Table (2): Means, Standard Deviations, and Relative Weights of the Items in the Financial and Resource Management Domain

No.	Statement	Mean	Standard Deviation	Relative Weight (%)	Level
1	I use applications to track the kindergarten's expenses and budget.	3.21	0.83	64.2%	Moderate
2	Computerized tools help manage available resources effectively.	2.92	0.96	58.4%	Moderate
3	Applications assist in making financial decisions based on accurate data.	3.08	0.98	61.6%	Moderate
4	Technology supports planning for purchasing educational materials.	3.22	0.89	64.2%	Moderate
5	Digital systems help monitor the use of resources and reduce waste.	2.95	0.94	59.0%	Moderate
	Overall Mean	3.07	0.76	61.4%	Moderate

Study Question 2:

"To what extent do kindergarten principals in Palestine utilize computerized applications to enhance financial and resource

management, considering the moderate level of adoption indicated by the data?"

The findings in Table (2), with an overall mean of 3.07 and a relative weight of 61.4%, indicate a moderate level of reliance on computerized applications for managing finances and resources in Palestinian kindergartens. This reflects a growing awareness of the importance of digital tools in streamlining budgeting, procurement, and resource monitoring, yet suggests a gap in full implementation.

This moderate adoption may be due to several factors: limited access to specialized financial software, lack of training in digital financial management systems, and perhaps organizational resistance to changing traditional practices. The relatively higher scores for using applications in budget tracking (3.21) and planning for educational purchases (3.22) highlight that principals do see tangible benefits in certain financial tasks, while lower scores in areas such as resource monitoring (2.95) suggest room for improvement in broader financial oversight.

These findings align with studies like Zarei & Khorrami (2023), which emphasized that while educational institutions increasingly recognize the value of technology in financial planning, actual usage often remains suboptimal due to capacity constraints (Zarei & Khorrami, 2023, *Journal of Educational Technology Systems*). Similarly, Al-Harthi (2022) pointed out that digital budgeting tools in educational settings are underutilized in many Arab contexts due to insufficient digital infrastructure and resistance to change (Al-Harthi, 2022, *International Journal of Educational Management*).

These insights confirm the need to invest in training and infrastructure to help kindergarten principals fully benefit from the potential of computerized financial systems. The moderate use observed in this study serves as a baseline for further improvements in digital financial leadership in early childhood education.

Table (3): Means, Standard Deviations, and Relative Weights of the Items in the Communication and Coordination Domain

No.	Statement	Mean	Standard Deviation	Relative Weight (%)	Level
1	I use applications to communicate with teachers and staff efficiently.	3.21	0.77	64.2%	Moderate
2	Digital tools help improve coordination with parents.	3.72	0.83	74.4%	Moderate
3	Applications support communication with	2.95	0.94	59.0%	Moderate

	educational supervisors and officials.				
4	Technology facilitates sharing important updates and announcements.	3.21	0.86	64.2%	Moderate
5	I rely on apps to coordinate activities and events among the staff.	3.26	0.75	65.2%	Moderate
Overall Mean		3.27	0.65	65.3%	Moderate

Study Question 3:

"To what extent do kindergarten principals in Palestine use computerized applications to enhance communication and coordination with teachers, staff, parents, and educational officials, considering the moderate level of adoption indicated by the data?"

The results in Table (3) show a moderate level of application usage in communication and coordination, with an overall mean of 3.27 and a relative weight of 65.3%. While principals recognize the utility of digital tools in enhancing communication, the extent to which they are utilized remains suboptimal.

The higher mean score for improving coordination with parents (3.72) indicates that applications are perceived as effective in strengthening communication with parents. This is particularly relevant in the context of early childhood education, where parent engagement is crucial. However, the lower scores for communication with educational supervisors (2.95) suggest that principals may not be fully utilizing technology in these professional interactions, possibly due to a lack of institutional support or insufficient training on how to effectively use digital communication tools in administrative settings.

The findings are consistent with studies such as Alqurashi et al. (2021), which found that educational leaders in the Middle East region largely utilize technology for communicating with parents but face challenges in using it effectively for internal coordination (Alqurashi et al., 2021, *Journal of Educational Technology Development and Exchange*). Additionally, Barker & Howlett (2022) highlighted the role of digital platforms in enhancing coordination among staff but noted that many educators are still hesitant to adopt technology for internal communication, which limits its effectiveness (Barker & Howlett, 2022, *International Journal of Educational Leadership*).

These studies emphasize the need for professional development and training in digital communication tools to help improve internal coordination, as well as promoting more comprehensive integration of technology for communication with educational supervisors and officials.

Table (4): Means, Standard Deviations, and Relative Weights of the Items in the Evaluation and Monitoring Domain

No.	Statement	Mean	Standard Deviation	Relative Weight (%)	Level
1	I use applications to evaluate teachers' performance.	3.26	0.85	65.2%	Moderate
2	Digital tools help monitor children's learning progress.	3.10	0.79	62.0%	Moderate
3	Applications provide reports that assist in making educational improvements.	2.82	0.97	56.4%	Moderate
4	I rely on technology to track the implementation of educational plans.	2.97	0.87	59.4%	Moderate
5	Applications support documentation of student assessments and observations.	2.77	0.99	55.4%	Moderate
	Overall Mean	2.98	0.73	59.7%	Moderate

Study Question 4:

"To what extent do kindergarten principals in Palestine use computerized applications for evaluating teachers' performance, monitoring children's learning progress, and tracking educational plans, given the moderate level of adoption indicated by the data?"

The results in Table (4) show a moderate level of use of computerized applications in the field of evaluation and monitoring, with an overall mean of 2.98 and a relative weight of (59.7%). While principals recognize the potential of digital tools in this domain, their use is not as widespread or advanced as it could be.

The higher mean score for evaluating teachers' performance (3.26) suggests that principals are more inclined to utilize technology for staff performance assessments. This aligns with the growing trend of digital performance management systems in educational institutions. However, the lower scores for monitoring student progress (3.10) and tracking the implementation of educational plans (2.97) indicate that principals may not be fully leveraging technology for these aspects, possibly due to a lack of integration or training in more complex digital monitoring tools.

These findings reflect trends seen in other studies, such as Goh & Lim (2022), who highlighted that educational institutions often struggle to fully integrate technology into monitoring systems due to insufficient resources or expertise (Goh & Lim, 2022, Educational Assessment, Evaluation and Accountability). Similarly, Fisher et al. (2021) emphasized that while teachers use digital tools for assessments, they

may not be used effectively for comprehensive evaluations due to gaps in data analysis skills or software capabilities (Fisher et al., 2021, Educational Technology Research and Development).

These results underscore the need for professional development programs to enhance principals' skills in using digital tools for tracking educational progress and improving the quality of educational outcomes.

Table (5): Means, Standard Deviations, and Relative Weights of the Items in the Administrative Decision-Making Domain

No.	Statement	Mean	Standard Deviation	Relative Weight (%)	Level
1	I make administrative decisions based on data provided by applications.	3.33	0.93	66.6%	Moderate
2	Digital tools help me analyze different aspects before making a decision.	3.13	1.03	62.6%	Moderate
3	I rely on applications to make timely and informed decisions.	3.15	1.01	63.0%	Moderate
4	Applications help prioritize tasks and manage time more effectively.	2.77	1.04	55.4%	Moderate
5	Technology improves the quality of decisions related to daily operations.	2.76	1.01	55.3%	Moderate
	Overall Mean	3.03	0.87	60.6%	Moderate

Study Question 5:

"To what extent do kindergarten principals in Palestine rely on computerized applications to improve their administrative decision-making, considering the moderate level of adoption indicated by the data?"

The results in Table (5) suggest that Palestinian kindergarten principals use computerized applications to assist in administrative decision-making at a moderate level, with an overall mean of 3.03 and a relative weight of 60.6%. While the adoption of digital tools for decision-making is evident, it is not yet fully integrated into the decision-making processes, and there are notable gaps in some areas.

The relatively higher scores for making decisions based on data (3.33) and relying on applications to make informed decisions (3.15) suggest that principals recognize the importance of data-driven decisions in improving the efficiency and accuracy of their administrative tasks.

However, lower scores for prioritizing tasks (2.77) and improving the quality of daily operations decisions (2.76) indicate that while principals utilize digital tools for certain administrative tasks, there is still a lack of comprehensive adoption across all decision-making aspects. This may be attributed to the absence of integrated systems, insufficient training, or challenges in the adaptability of digital platforms for daily operational decisions.

These results are consistent with findings from Venkatesh et al. (2019), who observed that educational leaders, while acknowledging the benefits of technology in decision-making, face challenges in adopting digital tools for all aspects of administration due to technical and resource limitations (Venkatesh et al., 2019, Educational Administration Quarterly). Similarly, Singh & Pandey (2020) noted that decision-makers in schools often rely on technology for some decisions, particularly those involving data analysis, but still prefer traditional methods for operational and routine decisions (Singh & Pandey, 2020, Journal of Educational Leadership and Policy Studies). These findings underscore the need for continuous professional development and improved system integration to enhance the overall use of technology in administrative decision-making.

Table (6): Means, Standard Deviations, and Relative Weights of the Items in the Field of Professional Development Domain

No.	Statement	Mean	Standard Deviation	Relative Weight (%)	Level
1	I use digital tools to identify training needs for the teaching staff.	3.62	0.59	72.4%	Moderate
2	Applications help schedule and manage professional development programs.	3.13	0.83	62.6%	Moderate
3	I track participation in training using digital platforms.	3.18	0.91	63.6%	Moderate
4	Technology supports ongoing learning for teachers and staff.	3.28	0.72	65.6%	Moderate
5	I use applications to access educational resources for self-development.	3.21	0.80	64.2%	Moderate
	Overall Mean	3.28	0.64	65.6%	Moderate

Study Question 6:

"To what extent do kindergarten principals in Palestine employ computerized applications to support professional development

activities for themselves and their staff, considering the moderate level of usage indicated by the results?"

The results in Table (6) demonstrate a moderate level of utilization of computerized applications in the professional development domain, with an overall mean of 3.28 and a relative weight of 65.6%. These findings indicate that principals are increasingly turning to digital tools to manage and enhance professional growth for both themselves and their staff, although the adoption is still not at an optimal level.

The highest-rated item—identifying training needs using digital tools (3.62)—suggests that principals are effectively using applications to diagnose and address staff development requirements. Similarly, the use of technology to support ongoing learning (3.28) and track training participation (3.18) indicates a clear recognition of the role of digital tools in managing and sustaining continuous learning environments. However, the relatively lower mean for scheduling and managing programs (3.13) shows that logistical aspects of professional development might still be handled manually or are constrained by system limitations.

These findings are supported by Zhao & Liu (2022), who highlighted that digital platforms enhance access to tailored training and learning resources, but implementation often varies based on technical infrastructure and institutional support (Zhao & Liu, 2022, *Professional Development in Education*). In a similar vein, Hallinger & Wang (2021) emphasized that while school leaders increasingly rely on technology for professional development planning, many still underutilize advanced features that support strategic learning initiatives (Hallinger & Wang, 2021, *Educational Management Administration & Leadership*).

Thus, the results affirm that principals are aware of the importance of professional development and are beginning to embed digital practices into their systems. However, more comprehensive integration, technical training, and policy support are needed to fully leverage the benefits of computerized applications in this domain.

Discussions:

The results of this study indicate a moderate level of utilization of computerized applications across all domains of decision-making in Palestinian kindergartens. This reflects a transitional stage in which digital tools are acknowledged but not yet fully integrated into administrative and educational processes, largely due to infrastructural, financial, and training limitations.

- Educational Planning Domain

The moderate usage level is consistent with findings by Alharthi & Asiri (2022) in Saudi Arabia, who found that digital planning tools were underutilized in early childhood settings due to lack of training and system access (Alharthi & Asiri, 2022, *Early Child Development and Care*).

The Researcher's Commentary is that the moderate use of computerized applications reflects the limited availability of advanced planning systems in Palestinian kindergartens, where planning is often still done manually due to infrastructure constraints.

- Financial and Resource Management Domain

Similar to the results reported in Komba & Mwandanji (2021) in Tanzania, financial management tools were not widely implemented in kindergartens due to inadequate ICT infrastructure and limited funding (Komba & Mwandanji, 2021, *International Journal of Education and Development using ICT*).

The Researcher's Commentary is that the moderate score indicates a growing awareness of the importance of digital financial tools, yet many kindergartens lack formal budgeting systems and rely on basic, often non-digital, methods.

- Communication and Coordination Domain

While digital tools were moderately used—especially for parent communication—this aligns with the work of Dong & Cao (2023) in China, who observed that principals favored informal platforms like messaging apps over structured communication systems due to ease of access (Dong & Cao, 2023, *Educational Technology Research and Development*).

The Researcher's Commentary is that despite a moderate level, communication with parents showed stronger digital engagement—likely due to the increasing use of smartphones—while communication with supervisors remains less developed.

- Evaluation and Monitoring Domain

The moderate level of use for monitoring and assessment reflects similar limitations noted in Chigona (2022) in South Africa, who reported that schools lacked customized evaluation systems suitable for early education, limiting effective digital monitoring (Chigona, 2022, *Journal of Educational Computing Research*).

The Researcher's Commentary is that the moderate result suggests that while principals value technology for tracking performance, the tools available may not be comprehensive or tailored for early childhood education contexts.

- Administrative Decision-Making Domain

As seen in Abu-Alruz & Khasawneh (2021) in Jordan, digital tools were acknowledged as beneficial for informed decision-making but

were not fully utilized due to technical and cultural barriers (Abu-Alruz & Khasawneh, 2021, Education and Information Technologies).

The Researcher's Commentary is that principals moderately use data-driven applications; however, real-time decision-making is often hindered by technical limitations and a lack of integrated management systems.

- Professional Development Domain

The results here resonate with Hallinger & Wang (2021), who found in Asian contexts that while digital tools were used for professional learning, structured implementation and institutional support were lacking (Hallinger & Wang, 2021, Educational Management Administration & Leadership).

The Researcher's Commentary is that the moderate level indicates an appreciation for digital learning tools, yet there remains a need for structured and consistent training programs supported by educational authorities.

In conclusion, while Palestinian kindergarten principals demonstrate moderate engagement with computerized applications, this pattern is comparable to other developing and emerging educational contexts. It highlights a global need for stronger digital infrastructure, targeted training, and supportive policies to fully capitalize on the benefits of technology in early childhood education decision-making.

Conclusions:

1. Computerized applications are moderately used to organize schedules and align plans with curriculum goals.
2. Digital tools support budgeting and resource planning but are less used for minimizing waste.
3. Applications are moderately effective in improving communication with staff and parents, especially with parents.
4. Technology is used to evaluate performance and monitor progress, but documentation tools are underutilized.
5. Principals use digital data for decisions, but less for daily operations and task prioritization.
6. Applications help identify training needs and support ongoing staff learning at a moderate level.

Recommendations:

Based on the study findings, several key recommendations are proposed to enhance the role of computerized applications in improving decision-making quality in Palestinian kindergartens:

First, enhancing digital infrastructure is essential. The Ministry of Education should prioritize providing stable internet access and

appropriate digital tools in kindergartens to facilitate the effective integration of technology in administrative and educational processes.

Second, providing specialized training is necessary to ensure that kindergarten principals and staff are equipped with the skills needed to use digital tools confidently. Continuous professional development programs focused on planning, evaluation, and communication technologies should be implemented.

Third, developing custom digital tools tailored to early childhood education would improve the relevance and usability of applications in kindergartens. These tools should include features such as lesson planning templates, child progress tracking, and interactive communication interfaces.

Fourth, integrating technology into financial systems would support efficient resource management. Easy-to-use digital platforms for budgeting, expense monitoring, and procurement planning should be introduced to support transparency and efficiency.

Fifth, supporting data-driven decision-making is crucial. Principals should be encouraged to utilize digital reports and analytics when making administrative decisions. Training on how to interpret educational data should also be provided.

Finally, strengthening parent-school communication platforms can improve coordination and engagement. Centralized, secure, and user-friendly digital channels should be developed to enhance the communication flow between kindergartens and families.

These recommendations collectively aim to build a more technology-enabled educational environment that fosters informed decision-making and professional growth in Palestinian kindergartens.

Ethical Considerations:

The study adhered to ethical research standards, ensuring voluntary participation, informed consent, and the confidentiality of all participants. Data was stored securely and used solely for the purposes of this research. Participants had the right to withdraw from the study at any point without any repercussions. Therefore, the study took into account the following:

- * Ethical approval: The study has been approved by the relevant authorities.
- * Consent to Participate: Written informed consent obtained from all participants.
- * Consent for Publication: Not applicable; no individual data disclosed.
- * Confidentiality: Participant identities and responses anonymized.

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CONFIRMATORY FACTOR ANALYSIS FOR INSTRUMENTS OF INNOVATIVE TEACHING PRACTICES FOR TEACHERS OF 21ST CENTURY CLASSROOM: PRELIMINARY FINDINGS

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Abstract: *Nigeria schools have adopted changes and innovation in teaching and learning. With this changes, efforts have been put in place by the government so that teachers can integrate innovative teaching to enhance students' engagement in the classroom. This study aimed to examine confirmatory factor analysis for instruments of innovative teaching practices for teachers of 21st century classroom: a preliminary finding. Quantitative research was adopted in the study. A purposive sampling technique was adopted to selected 200 teachers in Kwara State public schools. The instrument of innovative teaching practice had five dimensions (flipped classroom, google classroom-assisted learning; design-thinking process; project-based learning*

and blended learning) with 25 items. The Confirmatory factor analysis using maximum likelihood estimation technique (AMOS version 18) was performed to determine validity and reliability of the instrument. Confirmatory factor analysis had 16 items after removed the items with poor loadings. The findings of first order CFA analysis revealed that the model fit the data where fitness indexes were significant. Also, the finding further showed that second order analysis fitness indexes were satisfactory where the dimensions of ITP have significant value on main variable. The second order measurement model of innovative teaching practices was free from offending values with all fit statistics well above the set threshold. The innovative teaching practices questionnaire was proven to have a strong measurement model as well as reliable constructs. The study suggested that ITP instruments consider to be suitable for use by teachers of 21st century classroom at enhancing students' engagement in the classroom.

Keywords: *confirmatory factor analysis; innovative teaching practices; Structural Equation Modeling.*

Introduction

The policy of Nigeria government on the innovation practices in public schools' centre on integrating digital technology promotion of STEM (Science, Technology, Engineering, and Mathematics) as well as skills for self-survival. The national digital learning policy (2023) and national policy on ICT in education stated that digitalization of teaching would help in improve students' academic performance (Osakwe, 2013; Suleiman, 2020; Ibe & Ikokwu, 2025). The development and transformation of education have been tropical issue. According to the national policy on education which expressed that the adoption of technology in education is for national development (Matthew et al., 2022; Oghuvbu et al., 2022; Oluwagbemileke, 2024). There is monumental development in technology utilization which has demanded technological change in schools. So, transforming education in line with new technological change is necessary (Chris et al., 2015; Adewoye & Salau, 2021).

As a matter fact, innovation utilization has been seen in all area of educational practices for students' engagement. Information and communication technology (ICT) in education has led to tremendous change and innovation (Chris et al., 2015; Baba & Odiba, 2015;

Anikweze & Kanu, 2018; Gbesoevi et al., 2025). Computer aided learning is not merely used for instructional purpose but also as a tool for facilitate learning. Technologies are significant to transform the learning in the classroom. School needs to integrate technology for the student's learning outcome and teachers need to use it to support teaching (Zhanget al., 2020; Ibe & Ikokwu, 2025; Gbesoeviet al., 2025). Innovative practice aimed to introduce flipped classroom, google classroom-assisted learning; design-thinking process; project-based learning and blended learning.

It is germane to note that primary reason for innovative teaching practices in public schools in Nigeria is to bring new ideas replace existing system so as to enhance students' performance in the classroomw. Ejiofor and Ibara (2022) pointed that secondary education in Nigeria require new teaching techniques, information technology and communication, better ways of computing students result, blended learning so as to relevant in modern world of globalization with the purpose of achieving educational goals. However, several studies on innovative teaching practices ignored to subject instrument of innovative teaching practices to confirmatory factor analysis. Sensing this gap, this prompt the researcher to examine confirmatory factor analysis for instruments of innovative teaching practices for teachers of 21st century classroom: a preliminary finding. Based on this, these following research objectives were established.

1. To determine first order confirmatory factor analysis for innovative teaching practice constructs
2. To determine second order confirmatory factor analysis for innovative teaching practices constructs
3. The Assessment of validity and reliability for measurement model innovative teaching practices constructs

Literature Review

Defining Innovative Practices

The integration of innovativeness in education has gain prominence among the scholars on the role it plays in educational practices (Garcia & Sylvan, 2011; Hang & Van, 2020; Moreno-Guerrero et al., 2020; Blomeke et al., 2021; Ibe & Ikokwu, 2025). Various definitions of innovativeness have been made in different fields. Education is also an effective instrument to transform students in all levels of education. In the same vein, quality education to be attainable, the utilization of innovative teaching practices must be use to engage students in the classroom (Puranik, 2020; Blomeke et al., 2021; Ibe & Ikokwu, 2025). Therefore, innovative teaching is the use of technology into teaching and learning in the classroom to establish a robust learning experience

for students (Khairmar, 2015; Garzon Artacho et al., 2020; Gbesoeviet al., 2025). As world witness changing in education, teachers are require to have the capability to innovate the schools with new ideas and technology that would give in-depth understanding to the students. Innovative teaching is the process which starts with the providing a solution to a problem or injecting new ideas (Scott & Bruce, 1994; Garzon Artacho et al., 2020; Blomeke, et al., 2021; Ibe & Ikokwu, 2025). The increasing interest in the development of innovative skills in educational contexts has led to studies on the development of innovative practices in teacher education (Tyunnikov, 2017; Gbesoeviet al., 2025).

Additionally, Kalyani and Rajasekaran (2018) pointed that innovative teaching is novelty and creativity of teachers that transform the method and style of teaching and learning in the classroom situation. All the countries today are implementing new methods, ideas and technology to fostering students understanding of the lesson. In fact, innovative teaching is essential for the growth of present educational system for the achievement of students' potential (Kalyani & Rajasekaran, 2018; South-East, 2025). Teachers mastering of innovative teaching is a primary factor for the success innovative teaching. Teachers are expected to exhibit strong communication and collaboration skills, technology expertise, innovative and creative thinking, and problem-solving skills to help learners acquire these skills (Larson & Miller, 2011; Simanjuntak et al., 2021; Kwangmuang et al., 2021; South-East, 2025).

Likewise, teaching innovation can be seen as creation of new ideas, techniques, theories, and solutions that can be use classroom for the purpose of understanding the lesson. Numerous researchers across the globe agreed that creativity and innovation are important areas that can be used to facilitates effective learning in the school (Bowen et al., 2010; Kahramonovna et al., 2021; Blomeke, et al., 2021; South-East, 2025). The utilization of information technologies for teaching in the classroom and the introduce new equipment in the educational process make it possible to realize one of the main goals of student engagement (Durairaj, 2016; Al-Rahmi et al., 2020; Ibe & Ikokwu, 2025).

Conceptualized Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) can be regarded as powerful technique in analysis data in the field of research. CFA allows researcher to test the hypotheses of relationship between the observed variable and their underlying latent construct(s) exists (Steiger, 1990; Suhr, 2006). Some of the proponents of CFA affirmed that researchers must have a powerful theory underlying their measurement model before analyzing data. However, CFA relies on several statistical tests

to determine the adequacy of model fit to the data. The chi square test indicates the amount of difference between expected and observed covariance matrices. More so, the probability or significance level must be greater than 0.05 when chi-square is close to zero. Also, CFA provides a more explicit framework for confirming prior notions about the organization of a domain of content.

Likewise, CFA has become one of most commonly used statistical procedures in applied research (Brown, 2015). CFA is quite equipped to solve different kinds of questions that researchers often demand for. CFA is usually used during the process of scale development to examine the latent structure of a test instrument (e.g. a questionnaire). In this situation, CFA is put forward to verify the number of underlying dimensions of the instrument (factors) and the pattern of item-factor relationship (factor loadings). It is help in determine a particular test to be scored. It is well noted for analytic tool for other aspect psychometric evaluation. Even though, it may be used to estimate the scale reliability of test instrument in a manner that avoids the problems of traditional techniques (e.g. Cronbach's alpha). CFA has been regarded as an effective tool for constructs validation in the behavioral and education. The outcome of CFA can provide compelling evidence of the convergent and discriminant validity of theoretical constructs. Table 1 showed Comparison of Goodness-of-Fits Measure of the confirmatory factor analysis.

Table 1. Comparison of Goodness-of-Fit Measure of the confirmatory factor analysis

Level of Acceptance					
Fit index	Schumacker & Lomax (2004)	Reisinger & Mavonco (2007)	Hair et al., (2010)	Gaskin (2012)	Bagozzi & Yi (2012) Acceptance value
χ^2 value -		Low value (relative to df with $p < 0.05$)	$m < 12$: insignificant ($p > 0.05$) $m > 12$: significant ($p > 0.05$)	Insignificant - good fit; significant unsatisfactory	$N > 250$, $m > 30$ significant χ^2 value is expected

χ^2/Df	1 to 5	< 2 or < 3	< 2 or < 5	< 3	1 to 5
		3			
CFI	-	Value close to 1 > 0.9 good	> 0.9	> 0.9	≥ 0.93 > 0.9
RMSEA	< 0.05	< 0.08	0.03 to 0.0	< 0.05 good	≤ 0.07 < 0.8
A		< 0.05 good		< 0.08 adequate	
TLI	0 to 1	Value close to 1 > 0.9 good	> 0.9	> 0.9	≥ 0.07 > 0.9

Note: χ^2 =chi-square, df=degree of freedom, CFI=comparative fit index, RMSEA=Root mean square error of approximation, TLI=Tucker-Lewis index, m=number of observed variables

Methodology

Quantitative research design was employed in this study. Creswell (2017) posited that quantitative research is a type of research that try to seek response from the subject and they differ from one another. Hair et al. (2010) pointed that quantitative research is most common form of research for collecting data from target respondents specify in the study. The researcher personally went to all selected schools to collect the data. Furthermore, the study employed purposive sampling method and it is part of the non-probability sampling technique. The purposive sampling was used for sampling because of the knowledge and judgement where participants were selected that related to conditions put in place by the researcher (Guarte & Barrios, 2006).

The sample comprised of experience teachers who had teach for more five years. Equally, other criteria were the schools who had established for ten years with high performing record in the state. Self-administer questionnaires was done by the researcher to elicit data. The questionnaires personally distributed by the researcher and research

assistant through personal interaction. This would make researcher to interact with the respondents and to clarify questions that are vague. Creswell (2017) opined that self-administer questionnaire is the common practice in the research and appropriate for quantitative research like this research. Penultimately, 200 questionnaires were used for data analysis.

There were five dimensions formulated to measured innovative teaching. The section A of the instrument contained items of flipped classroom with items. Section B of the questionnaire comprised of the items of goggle classroom assisted learning using five items. The section C had items related to design-thinking process with five items and section D of the instrument had the items of project-based learning using five items. Section E was the items of blended learning. Therefore, all these instruments were based on five-point Likert-type scale ranging from (1) strongly disagree and (5) strongly agree, was used to measure each variable to verify the level of agreement by the selected participants of the study.

Similarly, reliability test, assessment of data normality, confirmatory factor analysis, second order analysis and validity were performed in the study. Cronbach Alpha coefficient was employed to determine internal consistency. Principal component factor analysis and Confirmatory factor analysis (CFA) was performed to determine the validity and confirmatory of constructs. Assessment of data normality was also performed.

Additionally, Confirmatory Factor Analysis (CFA) was used on the hypothesized measurement model with the use of Analysis Moment of Structure - AMOS version 18. Next, to determine the underlying constructs and the items of the study, construct validity is done equally performed. Construct validity entails convergent and discriminant validity. With this, Convergent Validity was examined based on the coefficient of each item loaded as well composite reliability of a latent variable (Hair et al., 2010). The value of composite reliability which greater than 0.70 show that composite reliability is strong and significant (Hair et al., 2010). In the same vein, discriminant validity was assessed by average variance extracted for all for study constructs which must be < 0.9 . If the value is below 0.9, the discriminant validity is accomplished (Hair et al., 2017).

Table 2

Cut-off values for composite and discriminant validity

Indicators	Cut-off value	Source

a. Kaiser-Meyer-Olkin (KMO)	Recommended value of 0.60 or above	Hair et al., 2010; Huck & Muller, 2012; Pallant, 2011; Tabachnick & Fidell, 2006
Unacceptable:<0.50, Miserable:>0.50, Mediocre:>0.60, Milddling:>0.70, meritorious:>0.80, Marvelous >0.90 (Hair et al.; 2010)		
b. Bartlett's Test of Sphericity	Significant at < 0.05	(Hair et al., 2010)
c. Anti-Image correlation: individual sampling adequacy (MSA)	.0.5	(Coakes & Steed, 2003; (Hair et al., 2010)
Inter adequacy	> 0.3	(Tabachnick & Fidell, 2006)
d. communalities (variables are well defined by the solution-low values require removal	> 0.4	(Gaskin, 2012) (Hair et al., 2010)
	> 0.5	
e. Convergent validity		
Factor loading based on sample size	Above sufficient factor loading to retain the item	(Hair et al., 2010)
f. Discriminant validity	No significant cross-loading (< 0.3)	(Bhattacharjee, 2012; Garson, 2013; Hair et al., 2010; Pallant, 2011)
* Cross-loadings the difference between factor loading and cross-loading that is less than 0.2 would be considered deletion		

Results of the Findings

Assessment of Data Normality

Prior to perform confirmatory factor analysis, assessment of preliminary test was determined if the data were normally distributed. In order to perform CFA, the sample size must be adequately. Confirmatory factor analysis requires a larger sample size. According to sample rule, Hair et al. (2010) suggested 50 observations as a minimum size in order to conduct CFA, but at the same time prefer sample size of 100 or more than that. In addition, sample to variables ratio, the recommended a minimum of 5:1 ratio e.g. five observations for each of the variables to be analyzed or 10:1 also acceptable. Based on literatures explored on the number of sample size, this study used 200 so that good criterion can be met. The skewness and kurtosis must fell within the range of ± 2 . The skewness and kurtosis generated in this study indicated that the data is normally distributed as shown Table 3. Therefore, as no violations were discovered, the data was considered for further analysis.

Table 3. Analysis of normality of the data

Items	N	Mean	Std. Deviation	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
FC1	200	3.94	1.150	-1.283	.172	1.067	.342
FC2	200	3.51	1.393	-.742	.172	-.793	.342
FC3	200	3.88	1.362	-1.131	.172	.022	.342
FC4	200	3.60	1.338	-.866	.172	-.463	.342
FC5	200	3.74	1.273	-.829	.172	-.447	.342
GC1	200	4.23	1.001	-1.994	.172	2.157	.342
GC2	200	3.57	1.391	-.780	.172	-.726	.342
GC3	200	4.04	1.097	-1.508	.172	1.883	.342
GC4	200	3.77	1.251	-.956	.172	-.196	.342
GC5	200	3.81	1.250	-1.133	.172	.249	.342
DTP1	200	4.26	.915	-1.415	.172	2.086	.342

DTP2	200	3.44	1.362	-.595	.172	-1.004	.342
DTP3	200	3.98	1.186	-1.275	.172	.864	.342
DTP4	200	3.62	1.366	-.841	.172	-.567	.342
DTP5	200	3.50	1.378	-.698	.172	-.748	.342
BP1	200	4.27	.939	-1.668	.172	3.019	.342
BP2	200	3.43	1.362	-.575	.172	-1.019	.342
BP3	200	3.98	1.178	-1.341	.172	1.030	.342
BP4	200	3.72	1.161	-.993	.172	.252	.342
BP5	200	3.98	1.098	-1.341	.172	1.299	.342
BL1	200	4.18	1.036	-1.518	.172	1.964	.342
BL2	200	3.53	1.272	-.719	.172	-.563	.342
BL3	200	4.01	1.173	-1.377	.172	1.160	.342
BL4	200	3.49	1.385	-.609	.172	-.935	.342
BL5	200	3.73	1.235	-1.090	.172	.241	.342

Note: All the items have a minimum value of 1 and a maximum value of 5.

The Assessment of Confirmatory Factor Analysis for Innovative Teaching

SEM is use to determine the confirmatory factor analysis for flipped classroom, google classroom-assisted learning; design-thinking process; project-based learning and blended learning with details techniques. The goodness of fit, convergent validity, discriminant validity, construct reliability and second order CFA test were also assessed. Several omnibus fit indices were used to estimate latent factors parameter, the root mean square error of approximation (RMSEA) value of .05 to .08 or .10 below, the less the better, the CMIN/DF of 1 to 5, the Tucker-Lewis Index (TLI) of goodness-of-fit (AGFI) of .90 or above, the root mean residual (RMR) of less than .05, the goodness-of-fit index (GFI) of .90 or larger, the Hoelter's critical number (CN) of estimate adequate or sufficient sample size for the model fit rather than focusing on model fit entirely (Tabachnick & Fidel, 2006). In addition, the chi-square degree of freedom (χ^2/df) of a 3.49 cut off ratio is also recommended as a goodness of fit between

“observed and reproduce correlation matrices” the above statistical calculation requirements and other relevant fit indices were suggested as indicatives that the models “fit the input data well (Pintrich, 1991; Tabachnick & Fidel, 2006).

Therefore, as shown in Figure 1 on the constructs of innovative teaching which include flipped classroom, google classroom-assisted learning; design-thinking process; project-based learning and blended learning. When these five constructs measuring innovative teaching practices were first run, the fitness index was not met due to some small load of items. The items below .60 caused the model to have poor fit. According to Hair et al. (2010) expressed that any items below .60 should be remove from the hypothesized model. Based on this, all the items below .60 were removed instantly. The items removed were FC4, GC1, GC5, DTP1, DTP3, BP1, BP5, BL1, BL5. When these items were removed, the fitness indexes improved instantaneously. The results of fitness indexes were $\chi^2=645.225$, $\chi^2/df=2.705$, $P=.000$, $DF=241$, $TLI=.923$, $CFI=.914$ and $RMSEA=.052$. these results of measurement model indicated that the data fit the hypotheses model and further analysis can be performed. See Figure 1 and Table 4 for the result of standardized regression weights.

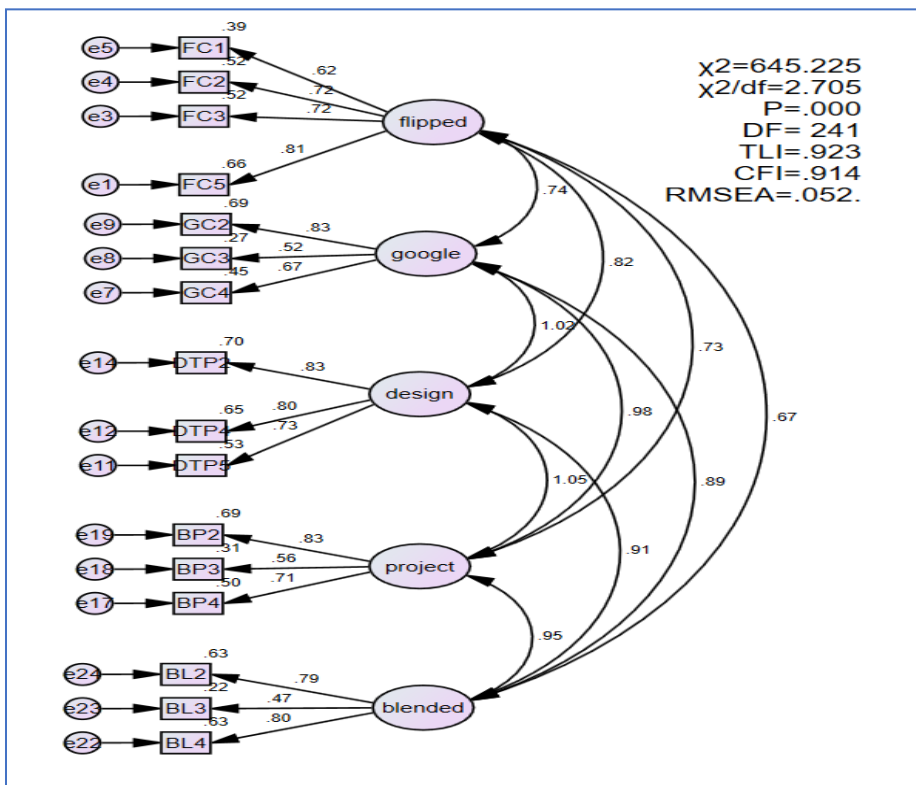


Figure 1. Confirmatory Factor Analysis for Innovative Teaching

Note: FC=flipped classroom; GC=google classroom-assisted learning; DTP=design-thinking process; BP=project-based learning; BL=blended learning

Table 4. Standardized Regression Weights

Items	Path	Constructs	Estimate loadings
FC5	<---	Flipped Classroom	.812
FC3	<---	Flipped Classroom	.718
FC2	<---	Flipped Classroom	.719
FC1	<---	Flipped Classroom	.622
GC4	<---	Google Classroom-Assisted Learning	.669
GC3	<---	Google Classroom-Assisted Learning	.524
GC2	<---	Google Classroom-Assisted Learning	.833
DTP5	<---	Design-Thinking Process	.730
DTP4	<---	Design-Thinking Process	.804
DTP2	<---	Design-Thinking Process	.834
BP4	<---	Project-Based Learning	.705
BP3	<---	Project-Based Learning	.559
BP2	<---	Project-Based Learning	.830
BL4	<---	Blended Learning	.795
BL3	<---	Blended Learning	.473
BL2	<---	Blended Learning	.793

Second Order Analysis for Innovative Teaching Construct

The second order analysis was performed for innovative teaching practices constructs. The fitness indexes for the second order were satisfactory. The results of fitness indexes were $\chi^2=645.225$, $\chi^2/df=2.705$, $P=.000$, $DF= 241$, $TLI=.923$, $CFI=.914$ and $RMSEA=.052$. In fact, the second order measurement model of innovative teaching practices was free from offending values with all fit statistics well above the set threshold. The results of five-factor innovative teaching model validated proved a satisfactory factorial validity, signifying that the core of the innovative teaching model could be represented by five general factors (flipped classroom, google classroom-assisted learning; design-thinking process; project-based learning and blended learning). These results were supported by Hair et al. (2010) in this study. The fitness indexes for the second order were satisfactory. the second order measurement model of innovative teaching was free from offending values with all fit statistics well above the set threshold. See Figure 2 and Table 5 for more details.

Figure 2. Second Order Analysis for Innovative Teaching Construct

Note: FC=flipped classroom; GC=google classroom-assisted learning; DTP=design-thinking process; BP=project-based learning; BL=blended learning

Table 5. Standardized Regression Weights

Constructs	Path	Main Construct	Estimate Factor Loadings
Flipped classroom	<---	Innovative	.749
Google Classroom-Assisted Learning	<---	Innovative	.979
Design-Thinking Process	<---	Innovative	1.026
Project-Based Learning	<---	Innovative	1.022
Blended Learning	<---	Innovative	.922

Table 6. The Assessment of Validity and Reliability for Measurement

Constructs	Items	Factor loading	Cronbach Alpha (above 0.6)	Composite Reliability (CR) (Above 0.60)	Average Variance Extracted (AVE) (Above 0.50)
Flipped Classroom	FC1	0.62	0.724	0.845	0.58
	FC2	0.72			
	FC3	0.72			
	FC4	This item was deleted due to low factor loading			
	FC5	This item was deleted due to low factor loading			
Google Classroom-Assisted Learning	GC1	This item was deleted due to low factor loading			
	GC2	0.83	0.676	0.894	
	GC3	0.52			
	GC4	0.67			

	GC5	This item was deleted due to low factor loading			
Design- Thinking Process	DTP1	This item was deleted due to low factor loading			
	0.68				
	DTP2	0.83	0.826	0.990	
	DTP3	This item was deleted due to low factor loading			
	DTP4	0.80			
	DTP5	0.73			
Project- Based Learning	BP1	This item was deleted due to low factor loading			
	0.71				
	BP2	0.83	0.730	0.765	
	BP3	0.56			
	BP4	0.71			
	BP5	This item was deleted due to low factor loading			
Blended Learning	BL1	This item was deleted due to low factor loading			
	0.76				
	BL2	0.79	0.762	0.808	
	BL3	0.47			
	BL4	0.80			
	BL5	This item was deleted due to low factor loading			

Table 7. The Discriminant Validity of the Constructs

Construct s	Flipped Classroom	Google Classroom -Assisted Learning	Design- Thinkin g Process	Project- Based Learnin g	Blended Learnin g
Flipped Classroom	0.82				
Google	0.74	0.85			

Classroom					
-Assisted					
Learning					
Design- Thinking Process	0.82	0.1.02	0.86		
Project- Based Learning	0.98	0.73	0.1.05	0.88	
Blended Learning	0.67	0.89	0.95	0.95	0.90

Discussion, Conclusion and Suggestions for Future Study

The results found in this study showed Cronbach Alpha value for all the five dimensions measuring innovative teaching practices was high and significant which was greater than 0.60 as suggested by Hair et al., (2010). Meanwhile, the confirmatory factor analysis was used which showed a satisfactory fitness indexes and loading greater than 0.60 which means the model fit the data. The assessment of fit (overall fit) for the model shows that it fits and can be accepted based on the indicators suggested by Hair et al. (2010) which indicate that data from the sample fit the innovative teaching practices model. Then, the results of convergent validity and discriminant validity of this study meet the acceptable value as well as fulfil the multivariate analysis rule of thumb. Therefore, the instruments developed was deemed fit to be used for innovative teaching practices containing these five factors. In fact, the primary focus of the instruments was to utilise in the Nigeria educational system by the teachers of 21st centuries. Nevertheless, the incoming study is needed to use bigger sample to further validate the validity of the instruments so as to see the real picture of the situation. Hence, this current study has showed the preliminary evidence of the instrument validity. The results are expected contribute immensely to enhance students' engagement in the classroom using innovative teaching practices. Of course, the findings might also be used to sensitize stakeholder in education and policy makers by knowing innovative teaching practices instruments which can be suggested for Nigeria schools. The use of relevant instruments would help teachers and students in preparing for changes and innovation that occur in educational system. Thus, using the established innovative teaching

instruments, it can predict effective learning outcome in Nigeria schools with huge competitive advantage.

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EFFECTS OF CONCRETE-VIRTUAL BLENDED INSTRUCTION ON STUDENTS' UNDERSTANDING OF SIMPLE A.C. CIRCUIT

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Abstract: *This study investigated the effects of Concrete and Virtual Manipulative Blended Instruction (CVM-BI) and cognitive ability on senior secondary students' conceptual understanding of the Simple A.C. Circuit. A quantitative, quasi-experimental pretest–posttest non-equivalent control group design was adopted. The sample consisted of 134 SS II Physics students selected from public secondary schools in Ilorin, Kwara State, using a multistage sampling technique. Intact classes were assigned to experimental and control groups. The experimental group received CVM-BI, which combined hands-on manipulation of physical circuit components with interactive virtual simulations, while the control group was taught using the conventional lecture method over a six-week period. Data were collected using the Simple A.C. Circuit Test (SACT) and the Cognitive Ability Questionnaire (CAQ), both of which had reliability coefficients of 0.86. Descriptive statistics, t-test, and ANCOVA were used to analyze the data at the 0.05 level of significance, with pretest scores as covariates and cognitive ability as a moderating variable. The results revealed that students taught with CVM-BI achieved significantly higher conceptual understanding than those taught with the traditional method, with a mean*

gain difference of 16.11 in favor of the experimental group. ANCOVA confirmed a significant effect of instructional method on students' understanding. Furthermore, students with high cognitive ability performed significantly better than those with low cognitive ability. The study concludes that CVM-BI is more effective than the traditional method in teaching Simple A.C. Circuits, and that cognitive ability significantly influences students' learning outcomes in Physics.

Keywords: *concrete manipulative; virtual manipulative; blended instruction; conceptual understanding; simple A. C. circuit.*

Introduction

Physics is widely recognized as a fundamental discipline underpinning science and technology, as its principles, laws, and theories form the basis of many modern technological developments (Ilo et al., 2022). Within the Nigerian education system, adequate proficiency in Physics is a key requirement for students intending to pursue careers in engineering, medicine, pharmacy, and other applied sciences (Ibrahim, 2023; Shehu et al., 2024). Physics is a science that utilizes experimental observation and quantitative measurement to comprehend natural events (Mamuda et al., 2023). This branch of science has contributed immensely to solving problems that are faced in the contemporary world. The study of physics has contributed to the economic growth of Nigeria in the areas of Agriculture, healthcare, security, and energy. These suggest that physics plays a crucial role as it is essential in various aspects of human life. Despite its central role, the attainment of instructional objectives in Physics remains a challenge, as reflected in persistently low levels of student achievement (Ilo et al., 2022). Also, Offordile et al., (2021), reported that despite the enormous benefits of physics to the nation, there has not been satisfactory academic performance of students in physics. Reports from the West African Examinations Council (WAEC) indicate that the proportion of candidates obtaining credit-level passes in Physics has consistently remained below 50% in many examination years, raising concerns about the effectiveness of current instructional practices and assessment approaches (Ibrahim, 2023; Ilo et al., 2022).

Researchers have identified the teacher's instructional method as a primary factor responsible for massive failure (Ibrahim, 2023; Makhdum et al., 2023). Traditional teaching is often teacher-centered, where information is dished out to students who remain passive recipients, a method that fails to stimulate inquiry or innovation (Bo et

al., 2022). This disconnection is particularly problematic in complex Physics subthemes like Simple A.C. Circuits, which require students to master abstract relationships between current, voltage, and frequency (Avwiri & Okey, 2025). In response to these challenges, a blended instruction has been identified as an instructional approach that integrates online digital media with face-to-face instruction to enhance student engagement and promote active participation (Ibrahim, 2023; Ilo et al., 2022).

A wide range of instructional tools is employed in Physics classrooms to improve students' academic performance and to cultivate positive attitudes toward the subject. These tools are often described using different terms across the literature, with some scholars referring to them as manipulative while others classify them as models or representational tools. In essence, a manipulative is any object that engages multiple senses and enables learners to physically interact with ideas by touching, moving, rearranging, and transforming materials. The term manipulate originates from the Old French word *manipûle*, meaning "to handle," and in English it denotes the act of operating, controlling, or managing something with the hands (Kontas, 2016). Smith (2009) further defines manipulative as tangible classroom materials designed to promote interactive and meaningful learning experiences in Physics. From these perspectives, manipulative can be understood as learner-centered tools drawn from students' environments that support the construction of mathematical concepts through direct experience.

Manipulative serve as bridges between abstract symbols and concrete understanding, making mathematical ideas more accessible and less intimidating, especially for students who struggle with formal representations. By allowing learners to explore relationships and patterns physically, these tools reduce cognitive overload and support conceptual clarity. Recognizing their value, the National Council of Teachers of Mathematics (NCTM, 2015) strongly recommended the integration of manipulative into classroom instruction as a means of promoting developmentally appropriate, hands-on learning. Their use aligns with contemporary constructivist views, which emphasize that knowledge is actively built by learners through interaction with their environment.

Within this broader pedagogical shift toward learner-centered and inquiry-based approaches, the use of manipulative has also gained prominence in science and physics education (Ahmad & Siller, 2024). In both mathematics and physics, manipulative are commonly classified into two major categories: Concrete Manipulative (CM) and Virtual Manipulative (VM). Concrete manipulative are physical

materials, such as circuit components, lenses, springs, geometric solids, and measuring instruments, that students can touch, assemble, and manipulate directly. These tools engage multiple sensory channels and provide tactile and kinesthetic experiences that support memory formation, conceptual grounding, and experiential learning.

In contrast, virtual manipulative are interactive digital representations accessed through computers, tablets, or mobile devices. They allow learners to explore ideas using simulations, animations, and dynamic models that respond in real time to user input (Ahmad & Siller, 2024). While CM offer physicality and haptic feedback that help students connect abstract concepts to real-world experiences, VM extend learning by enabling the visualization of invisible or inaccessible processes, such as electron flow, electric fields, wave propagation, and atomic interactions that lie beyond direct human perception. Virtual environments also permit rapid manipulation of variables, immediate feedback, and safe experimentation with scenarios that may be impractical, costly, or dangerous in physical laboratory settings.

When strategically combined, concrete and virtual manipulative create complementary learning experiences. Concrete tools ground understanding in physical reality, while virtual tools enhance conceptual insight, representational fluency, and cognitive flexibility. This blended use of manipulative supports deeper conceptual change, strengthens problem-solving skills, and fosters meaningful engagement across mathematics and physics learning. As such, manipulative, whether physical or digital, represent powerful pedagogical resources for transforming abstract ideas into accessible, student-centered learning experiences.

Blended instruction refers to an instructional approach that combines traditional face-to-face teaching with online and technology-mediated learning experiences (Li et al., 2025). The rapid integration of digital technologies into education, alongside their widespread accessibility in everyday life, has profoundly transformed how students access information, engage with content, and construct knowledge. Within this evolving context, blended learning has emerged as a promising pedagogical model for enhancing instructional effectiveness. By integrating the innovative affordances of online environments with the interpersonal interaction and immediacy of classroom teaching, blended instruction creates a more flexible, adaptive, and inclusive learning experience.

More importantly, blended learning supports the development of modern, student-centered learning environments that promote active participation, autonomy, and deeper engagement. Learners are empowered to take greater responsibility for their academic

development through opportunities for self-paced study, collaborative tasks, and continuous feedback (Justine & Geronimo, 2025). When blended instruction is extended to include both Concrete Manipulative (CM) and Virtual Manipulative (VM), its instructional potential is further enhanced. Research suggests that a blended use of CM and VM is more effective than relying on either medium alone because it harnesses the unique affordances of both physical and digital tools. This dual approach enables students to transition more efficiently from concrete representations to abstract symbols and conceptual understanding within a shorter period (Ahmad & Siller, 2024; Siller & Ahmad, 2024).

Empirical evidence strongly supports the effectiveness of blended learning across science subjects. For instance, Demirkol and Kazu (2014) investigated the impact of a blended learning model on high school students' academic performance in biology and found that students in the blended learning group significantly outperformed those taught using only traditional classroom methods. Similarly, Ceylan and Kesici (2017) reported that students exposed to a blended learning environment demonstrated higher academic achievement than their counterparts in conventional face-to-face instruction. These findings collectively suggest that blended instruction, particularly when enriched with both concrete and virtual learning tools, offers a robust framework for improving students' understanding, engagement, and academic outcomes.

Despite advances in instructional design and the increasing adoption of blended and technology-enhanced approaches, a critical gap persists in achieving instructional effectiveness in physics education. High failure rates in Physics continue to be reported, in part because instruction is often designed for students as a homogenous group, without sufficient consideration of how individual learner characteristics interact with both physical and digital instructional components (Ahmad & Siller, 2024). This "one-size-fits-all" approach overlooks important student-level variables that influence how learners process information, engage with learning tasks, and construct conceptual understanding.

In particular, there is limited empirical understanding of how cognitive ability and critical thinking skills moderate the effectiveness of a blended manipulative instructional approach (Ahmad & Siller, 2024; Siller & Ahmad, 2024). While virtual tools can simplify and visualize real-world models to accommodate learners with varying cognitive levels, some students may still require the grounded, sensory-rich input provided by concrete materials in order to form stable and transferable mental representations (Siller & Ahmad, 2024). The absence of research that explicitly examines these moderating variables makes it

difficult for educators to determine whether a given blend of digital and concrete tools is equally effective for students who excel in abstract reasoning and those who rely more heavily on visual or tactile representations.

Consequently, without systematic investigation into how cognitive ability and critical thinking interact with blended manipulative instruction, instructional decisions remain largely intuitive rather than evidence-based. This study therefore seeks to address this gap by determining the comparative effects of concrete and virtual manipulative blended instruction on students' performance in Simple A.C. Circuits, with specific emphasis on examining how cognitive ability moderate the learning outcomes. By doing so, the study aims to provide empirically grounded insights that can inform more differentiated, inclusive, and effective physics teaching practices.

Cognitive ability refers to the capacity of the human brain to acquire, store, process, and retrieve information. It encompasses key mental functions such as attention, memory, logical reasoning, information processing, and the ability to transform and apply knowledge across contexts. Cognitive ability is widely regarded as one of the most extensively studied and most reliable predictors of students' academic achievement (Matthias et al., 2016; Vilia et al., 2017). Shi and Qu (2022) classify cognitive ability into several core components, including memory ability, representational ability, information processing ability, logical reasoning ability, and thinking transformation. These components work together to determine how effectively learners understand, organize, and apply knowledge in academic settings.

Empirical studies consistently show that cognitive ability plays a decisive role in shaping students' educational trajectories and long-term outcomes. Chen (2016) argues that cognitive ability significantly influences students' future directions, noting that learners with stronger cognitive skills are more likely to attend general academic high schools, whereas those with weaker cognitive abilities are more likely to be directed toward vocational pathways. These findings align with the Knowledge Processing Theory proposed by Xu and Li (2015), which posits that students with higher cognitive ability can extract key information more quickly and accurately, encode it more efficiently in memory, and generate more effective outputs during learning and assessment, as a result, such students tend to achieve higher academic performance (Zhang & Zhang, 2011).

Conversely, when cognitive ability is low, important information may be lost at various stages of the learning process, during attention, encoding, storage, or retrieval, which reduces the quality and quantity

of effective knowledge output and leads to lower academic achievement (Miriam et al., 2011). Although researchers agree that cognitive ability is strongly linked to academic success, there is no complete consensus on the exact mechanisms through which it exerts its influence. This lack of agreement is partly due to differences in how cognitive ability is defined and measured across studies (Formazin et al., 2011).

Further evidence highlights specific cognitive components as critical predictors of achievement. Tikhomirova et al. (2020) reported that information processing speed is a key predictor of fluid intelligence, working memory, and number sense, all of which contribute to individual differences in academic success. Similarly, Raj and Komalavalli (2021) found a strong positive relationship between students' cognitive ability and their academic achievement. Xu and Li (2015) also concluded that attention is significantly correlated with academic performance, with correlation coefficients ranging from 0.40 to 0.50. However, findings are not always consistent. For example, Zhang (2008) reported that logical reasoning ability had a moderate correlation (around 0.30) with both Chinese and Mathematics scores, while attention showed no significant relationship with either subject.

Taken together, these studies suggest that cognitive ability influences academic achievement both directly and indirectly through multiple cognitive pathways. However, the variability in results indicates that the effects of individual cognitive factors are complex and context-dependent. Therefore, although cognitive ability is a powerful determinant of academic success, more precise and comprehensive models are still needed to explain how specific cognitive components interact with instructional environments and student characteristics to shape learning outcomes.

Aim and Objectives of the Study

This study investigated analysis of concrete and virtual manipulative blended instruction' effects on students' conceptual understanding in simple A. C. circuit. Specifically, the study investigated:

- (1) the effect of concrete and virtual manipulative blended instruction in students' conceptual understanding in Simple A. C. circuit.
- (2) the effect of cognitive ability on students' conceptual understanding in Simple A. C. circuit.

Research Questions

The following research questions were raised and answered.

- (1) Is there any difference in the conceptual understanding of senior secondary students taught Simple A. C. Circuit using

concrete and virtual manipulative blended instruction and those taught using traditional teaching method?

(2) What is the effect of senior secondary students' cognitive ability on their conceptual understanding of Simple A. C. Circuit?

Hypotheses

The following hypotheses were formulated and tested:

H01: There is no significant difference in the conceptual understanding of senior secondary students taught Simple A. C. Circuit using Concrete and Virtual Manipulative blended instruction and those taught using traditional teaching method; and

H02: There is no significant effect of senior secondary students' Cognitive Ability on their conceptual understanding of Simple A. C. Circuit.

Material and Methods

This study adopted a quantitative research approach and utilized a quasi-experimental pretest-posttest non-equivalent control group design to investigate the analysis of Concrete and Virtual Manipulative Blended Instruction (CVM-BI) on senior secondary students' performance in Simple A.C. Circuit. The design was appropriate because intact classes were used and randomization at the individual level was not feasible, thus reflecting real classroom condition. The target population comprised all Senior Secondary School Physics students in Ilorin, Kwara State. A multistage sampling technique was employed to select a sample of 134 Senior Secondary School II (SS II) students from public secondary schools that had qualified Physics teachers, adequate Simple A.C. Circuit physical components, and functional ICT facilities. The selected intact classes were randomly assigned to either the experimental group or the control group. Students in the experimental group were taught using the CVM-BI approach, which integrated hands-on manipulation of physical circuit components with interactive virtual simulations, while those in the control group received instruction through the conventional lecture-based method. The instructional intervention lasted for six weeks, with two Physics lessons per week, and both groups were exposed to the same content using standardized lesson plans to ensure uniformity.

Data were collected using two validated instruments: the Simple A.C. Circuit Test (SACT) and the Cognitive Ability Questionnaire (CAQ). The SACT was designed to assess students' performance in Simple A.C. Circuit, whereas the adopted CAQ which was developed by Boadbent et al. (1982) measured students' cognitive ability in terms of memory, logical reasoning, and information-processing skills. Both instruments underwent face and content validation by experts in

Physics Education and Measurement and Evaluation to ensure relevance, clarity, and adequate coverage of the content. The reliability of the SACT was established using the Kuder–Richardson Formula 20 (KR-20), while the reliability of the CAQ was determined using Cronbach’s alpha, with coefficients of 0 .86 and regarded as acceptable for the study. The SACT was administered to both groups as a pretest before the commencement of instruction and as a posttest after the completion of the treatment, while the CAQ was administered prior to the intervention to determine students’ cognitive ability (high and low cognitive ability). Data were analyzed using descriptive statistics (mean and standard deviation) to answer the research questions, while t-test and Analysis of Covariance (ANCOVA) to test the hypotheses at the 0.05 level of significance, with pretest scores as covariates and cognitive ability treated as a moderating variable.

Approval to conduct the study was obtained from the principals of the selected schools prior to data collection. Because the participants were minors, informed consent was obtained from the students and their parents or legal guardians. Participation was voluntary, and students were informed of their right to withdraw from the study at any time without penalty. Anonymity and confidentiality were ensured by assigning identification codes in place of names on all research instruments. All data were used exclusively for research purposes and were securely stored to prevent unauthorized access. To ensure equitable treatment, students in the control group were granted access to the CVM-BI instructional materials after the study concluded so that no group was academically disadvantaged.

Table 1: Research Design Outline

Group	Pre-test	Treatment	Post-test
Experimental	O1	X	O2
Control	O3		O4

O1 indicates the pre-test of the experimental group

O2 indicates the post-test of the experimental group

O3 indicates the pre-test of the control group

O4 indicates the post-test of the control group

X indicates the treatment administered to the experimental group.

Results

Research Question 1: Is there any difference in the conceptual understanding of senior secondary students taught Simple A. C. Circuit

using concrete and virtual manipulative blended instruction and those taught using traditional teaching method?

Table 2 indicates a clear difference in the conceptual understanding of senior secondary students who were taught Simple A.C. Circuit using the Concrete and Virtual Manipulative Blended Instruction (CVM-BI) and those taught with the traditional teaching method. The students in the experimental group, who received the blended instructional approach, recorded a mean gain score of 41.38, whereas their counterparts in the control group achieved a lower mean gain score of 25.27. This represents a substantial mean gain difference of 16.11 in favour of the experimental group.

This result suggests that the CVM-BI approach was more effective in enhancing students' conceptual understanding of Simple A.C. Circuits than the conventional method. The higher gain scores among students exposed to both concrete and virtual manipulative imply that engaging learners through multiple representations and interactive experiences promotes deeper understanding of physics concepts like the simple A. C. circuit.

Table 2: Pre-Test and Post-Test Mean Scores of Students taught using Concrete and Virtual Manipulative Blended Instruction and those taught using Traditional Teaching Method

Groups	N	Pre-Test		Post-Test		Mean Gain	Mean Difference
		Mean	SD	Mean	SD		
Experimental	78	31.45	6.28	72.83	8.14	41.38	16.11
Control	56	30.97	6.11	56.24	7.92	25.27	

Hypothesis 1: There is no significant difference in the conceptual understanding of senior secondary students taught Simple A. C. Circuit using Concrete and Virtual Manipulative blended instruction and those taught using traditional teaching method

Table 3 reveals that the main effect of instructional methods; the comparison between the Concrete and Virtual Manipulative Blended Instruction (CVM-BI) and the traditional teaching method in teaching Simple A.C. Circuit, is statistically significant, $F(1, 174) = 1982.28$, $p < 0.05$. This indicates that the both instructional methods used had a strong influence on students' conceptual understanding. This result shows that there is a meaningful difference between the conceptual understanding of students in the experimental group and those in the control group, with the advantage clearly in favour of the experimental group. Students who were taught using the blended approach that

combined concrete and virtual manipulative demonstrated significantly higher conceptual understanding of Simple A.C. Circuits than those taught through the traditional method, highlighting the effectiveness of CVM-BI in promoting deeper learning of simple A. C. circuit.

Table 3: ANCOVA Summary of Differences in Students' Understanding of Simple A.C. Circuits by Teaching Method

Source	SS	Df	MS	F	p-value
Corrected Model	4553.225 ^a	2	2276.613	1097.36	0.001
Intercept	8999.579	1	8999.579	4337.92	0.001
Covariate	1159.172	1	1159.172	558.74	0.001
Group	4112.487	1	4112.487	1982.28	0.001
Error	360.986	174	2.075		
Total	41434.162	177			
Corrected Total	4914.211	176			

^a $R^2 = .927$ (Adjusted $R^2 = .926$).

Research Question 2: What is the effect of senior secondary students' cognitive ability on their conceptual understanding of Simple A. C. Circuit?

Table 4 summarizes the mean scores of senior secondary students' conceptual understanding of the simple A.C. circuit based on their levels of cognitive ability. The results show that students classified as having high cognitive ability obtained a mean score of 74.62, whereas those with low cognitive ability recorded a lower mean score of 66.41. This yields a mean difference of 8.21 points, indicating that students with higher cognitive ability demonstrated markedly better conceptual understanding of the simple A.C. circuit than their counterparts with lower cognitive ability.

Hypothesis 2: There is no significant effect of senior secondary students' Cognitive Ability on their conceptual understanding of Simple A. C. Circuit

The results presented in Table 4 indicate that the computed t -value is 3.94 with 132 degrees of freedom, and the associated probability value is 0.001, which is less than the 0.05 level of significance. Since the obtained p -value is lower than the alpha level, the null hypothesis 2 is not accepted. This implies that the difference observed is statistically significant. Consequently, senior secondary students' cognitive ability has a significant effect on their conceptual understanding of the simple A.C. circuit. In other words, variations in students' levels of cognitive

ability meaningfully influence how well they understand concepts related to simple alternating current circuits.

Table 4: T-test Analysis of Results of senior secondary students' Cognitive Ability on their conceptual understanding of Simple A. C. Circuit

Cognitive Ability Level	N	Mean	SD	Df	t-value	Mean Difference	Sig. (2-tailed)
High Cognitive Ability	68	74.62	11.84	132	3.94	8.21	0.001
Low Cognitive Ability	66	66.41	13.02				

Discussion

This study examined the effects of Concrete and Virtual Manipulative Blended Instruction on senior secondary students' conceptual understanding of the Simple A.C. Circuit. The findings showed that there was a significant difference in the conceptual understanding of students who were taught using the Concrete and Virtual Manipulative blended approach and those who were taught with the traditional teaching method. Specifically, students in the blended instruction group performed better than their counterparts in the traditional group. This result is consistent with the studies of Demirkol and Kazu (2014) and Ceylan and Kesici (2017), which reported that students exposed to blended learning significantly outperformed those taught solely through conventional methods. These results collectively indicate that blended instruction, especially when enriched with both concrete and virtual learning tools, provides a strong framework for enhancing students' understanding, engagement, and academic achievement.

Furthermore, the study also revealed that senior secondary students' cognitive ability had a significant effect on their conceptual understanding of the Simple A.C. Circuit. This finding aligns with the work of Chen (2016) and Xu and Li (2015), who argued that students with higher cognitive ability are able to extract key information more quickly and accurately, encode it more efficiently in memory, and generate more effective responses during learning and assessment. As a result, such students tend to achieve higher levels of academic performance.

Conclusion

This study examined the effects of Concrete and Virtual Manipulative Blended Instruction (CVM-BI) and students' cognitive ability on senior secondary students' conceptual understanding of the Simple A.C. Circuit. Using a quasi-experimental design, the study compared students exposed to the CVM-BI approach with those taught using the traditional lecture-based method. The results revealed that students who were taught through CVM-BI demonstrated significantly higher conceptual understanding than their counterparts in the control group. This indicates that integrating concrete manipulatives (such as physical circuit components) with virtual simulations within a blended instructional framework creates a more interactive and learner-centered environment that promotes meaningful learning. The superiority of the CVM-BI approach may be attributed to its capacity to engage multiple senses, enhance visualization of abstract concepts, and provide opportunities for active exploration. Alternating current circuits are often perceived as abstract and mathematically demanding; however, the combination of hands-on experiences and computer-based simulations enables students to observe circuit behavior, manipulate variables, and receive immediate feedback. This process strengthens conceptual connections, reduces misconceptions, and supports deeper understanding beyond rote memorization. Furthermore, the findings showed that students' cognitive ability significantly influenced their conceptual understanding of the Simple A.C. Circuit. Students with higher cognitive ability achieved better mean scores than those with lower cognitive ability. This suggests that abilities such as logical reasoning, information processing, memory retention, and problem-solving skills play a crucial role in mastering complex physics concepts. Learners with stronger cognitive skills may find it easier to integrate new information with prior knowledge, interpret graphical representations, and apply theoretical principles to practical situations. Overall, the study underscores the importance of adopting innovative instructional strategies like CVM-BI while also recognizing individual differences in learners' cognitive abilities. For optimal learning outcomes in physics, educators should combine effective teaching methods with instructional supports that accommodate diverse cognitive levels, thereby promoting improved conceptual understanding and overall academic achievement.

Recommendation

Based on the findings of the research, it was recommended that physics teachers should incorporate Concrete and Virtual Manipulative Blended Instruction into the teaching of abstract topics such as Simple

A.C. Circuits to enhance students' conceptual understanding and active participation. Also, teachers should design instruction that accommodates different levels of cognitive ability by using Teachers should design instruction that accommodates different levels of cognitive ability by using differentiated teaching strategies, scaffolding, and varied learning activities to support both high and low cognitive ability learners. to support both high and low cognitive ability students.

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RECEPTION OF LITERARY TEXT BY HIGH SCHOOL STUDENTS

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Abstract: *The article investigates the way in which high school students receive literary texts in the context of integrating visible learning technologies. The research was conducted on a sample of 100 11th grade students from the “Andronic Motrescu” College in Rădăuţi, with the objective of analyzing the frequency of reading, preferences for text types and the impact of digital tools on understanding and affective involvement. The results indicate that intrinsic motivation, previous experiences and socio-cultural context significantly influence the reception of literary texts. Digital technologies and visual activities, such as concept maps, multimedia clips and interactive applications, contribute to increasing involvement, developing literary empathy and stimulating critical thinking. The study offers pedagogical recommendations for integrating digital tools in teaching literature, promoting an active and reflective approach, adapted to the diversity of students. The conclusions support the development of a model of good practices that combines traditional and innovative methods to optimize the literary-artistic learning process.*

Keywords: *literary reception; educational technology; visible learning; motivation, literary skills; high school students; digital methodology.*

Introduction

Reading literary texts is a complex, multidimensional process, involving both cognitive and affective, social and metacognitive activities. In high school education, the development of literary reception skills is essential for the formation of critical thinking, creativity and aesthetic sensitivity of students (Callo et al, p. 34). The specialized literature emphasizes that active reading of the text is not limited to the simple decoding of words, but involves a deep analysis of the narrative structure, the identification of themes and symbols, as

well as the evaluation of the author's perspective and the impact on the reader (Hadîrcă et al, 2019, p. 112).

Recent studies in the field highlight that the student's experience in literary reading is influenced by multiple factors: intrinsic and extrinsic motivation, level of linguistic competence, previous reading experiences, family and cultural background, as well as individual learning styles (Hadîrcă et al, 2018, p. 78). Thus, literary reception becomes a dynamic and personalized process, which can be optimized through pedagogical interventions adapted to the specific needs of students.

An essential dimension in contemporary reading research is the integration of digital technologies into the learning process. According to the concept of Visible Learning promoted by Hattie and his collaborators, students benefit from clarity on objectives, constant feedback and explicit strategies, which facilitates active and reflective learning (Marin, 2013, p. 56). In the context of literary education, digital platforms, visual applications, interactive simulations and multimedia resources offer unique opportunities to stimulate students' interest, motivation and involvement, transforming text reading into an interactive and captivating experience (Marin, 2016, p. 87).

Research in the field of reading didactics shows that the use of digital tools can enhance the understanding of literary texts, while developing cognitive, affective and social skills. Students who use interactive technologies demonstrate a greater capacity to analyze characters, identify literary themes and symbols and argue their own opinions (Marin, 2016, p. 134). In addition, the integration of technologies facilitates the adaptation of activities to the individual level of competence and learning style of each student, allowing for personalized progress and effective monitoring of learning (Marin et al, 2016, p. 45).

From a socio-cultural perspective, literary reading is influenced by the family environment, cultural experiences and the level of exposure to varied texts. Students who benefit from favorable reading contexts and teacher support demonstrate greater involvement and a better capacity to interpret and internalize literary messages (Marin et al, 2014, p. 23). In this sense, the present study considers that the integration of modern teaching strategies and digital resources in the educational process not only optimizes the reception of texts, but also contributes to the development of reflective and creative skills, essential for the formation of critical and empathetic readers.

The reception of literary texts by high school students represents a major area of interest both in modern pedagogy and in contemporary educational research. Literature, as a form of artistic expression and

cultural, not only develops linguistic skills, but also contributes to the formation of critical thinking, aesthetic sensitivity and the ability to reflect on social values and norms (Callo et al, 2016, p. 34). In the current context, in which digital technology is becoming increasingly present in the educational process, the study of how students interact with literary texts through digital tools is gaining increased relevance. Visible learning technologies allow teachers to monitor students' progress, provide immediate feedback and adapt activities to the specific needs of each student, which can significantly influence the level of reception and understanding of the literary text (Callo et al, 2019, p. 112).

Recent studies highlight the fact that students' affective and cognitive involvement in literary activities depends not only on the quality of teaching materials, but also on their intrinsic motivation, previous reading experiences and socio-cultural context (Hadîrcă et al, 2018, p. 87). Marin (2013) emphasizes the importance of student-literary work interaction from the perspective of literary-artistic attitudes and values, highlighting the fact that students develop an active reception when they are involved in activities that require analysis, interpretation and critical argumentation of texts (Marin, 2013, p. 134). At the same time, Hadîrcă and colleagues (2018, 2019) emphasize the role of pedagogical strategies and digital tools in the formation of a cultured speaker, emphasizing the need for interactive teaching that stimulates both cognitive and affective skills (Marin et al, 2015, p. 22; Marin, 2016, p. 45).

The main objective of the present research was to identify how 11th grade students, coming from different profiles (human, real, technological) and distinct environments (urban and rural), perceive the reading of literary texts and to what extent digital technologies influence their involvement and performance. In this sense, multiple dimensions of literary reception were monitored: the frequency and type of reading, students' motivation, the difficulties encountered, the degree of use of digital technologies and their impact on the process of understanding and interpreting the text. The analysis of these dimensions allows the development of differentiated teaching strategies, adapted to the level of competence and interests of students, as well as the efficient integration of digital resources in the teaching of literature (Marin et al, 2015, p. 112).

From a methodological perspective, the research uses an integrative framework, combining the descriptive-investigative approach with quantitative and qualitative methods, including questionnaires applied to a sample of 100 students from the "Andronic Motrescu" College in Rădăuți. The sample, consisting of 36 boys and 64 girls, with a

balanced distribution between technological, real and human profiles, reflects the diversity of 11th grade students, allowing the identification of relevant patterns in terms of reading habits, literary preferences and attitudes towards digital activities (Marine et al, 2014, p. 45).

The importance of integrating digital technologies into the teaching process derives from the fact that the digital environment offers interactive and multimodal resources that stimulate both the understanding of literary concepts and the affective involvement of students. The use of multimedia presentations, visual applications, testing platforms and other digital tools facilitates a more active reception, encourages critical thinking and contributes to the consolidation of reading skills (Marin et al, 2012, p. 78). In addition, technologies allow the personalization of the learning process, so that students with different levels of competence can progress individually and benefit from adequate support for the interpretation and analysis of literary texts.

The literature emphasizes that the development of literary skills is not limited to memorizing content, but involves students' ability to identify themes and symbols in the text, analyze narrative relationships, and express reasoned critical opinions. Marin et al. (2016, 2018) highlight those interactive activities, teacher guidance, and student involvement in visual or collaborative projects promote the internalization of knowledge and the development of reflective thinking (Marin et al, 2010; p. 112; Marine et al 2009, p. 45). In conclusion, the introduction of this article places the study in the context of multidimensional research, which considers that the reception of literary texts by high school students is simultaneously influenced by cognitive, affective, social, and technological factors. The study aims not only to analyze reading habits and literary preferences, but also to evaluate the impact of modern teaching strategies and digital tools on student performance, thus outlining an integrated model of good practices in literary-artistic education, applicable in various school contexts (Marine et al, 2023, p. 23).

Research methodology

To achieve the proposed objectives, the research was conceived as a descriptive-investigative study, with a mixed design, integrating both quantitative and qualitative methods. The mixed approach allows the identification of behavioral and attitudinal patterns of students in relation to the reading of literary texts, as well as the assessment of the impact of digital technologies on the learning process (Callo et al, 2016, p. 34).

The study sample consisted of 100 11th grade students of the “Andronic Motrescu” College in Rădăuți, representing the human, real and technological profiles, with both urban and rural origins. The gender distribution was 36 boys and 64 girls, providing a balanced perspective on the diversity of the participants. The sample selection was carried out through non-random sampling, based on the availability of students, an appropriate method for educational research involving volunteer students (Hadîrcă et al, 2019, p. 112). Students were informed about the purpose of the study and participated voluntarily, respecting the ethical principles of educational research, including confidentiality of responses and the possibility of withdrawing from the study at any time (Hadîrcă et al, 2018, p. 87). The research aimed to analyze the relationship between two main categories of variables:

- Dependent variable: the level of reception and understanding of the literary text by students, measured by reading frequency, literary preferences, motivation and difficulties encountered;
- Independent variable: the use of modern teaching strategies and digital technologies (educational platforms, multimedia resources, interactive and visual activities) in the process of teaching–learning–evaluating literature (Marin, 2013, p. 134).

This division allows for the assessment of how innovative methods and digital resources influence students’ cognitive and affective engagement, as well as the development of literary-artistic skills.

Data collection was carried out through structured questionnaires, which included items regarding reading frequency, preferences for types of literary texts, reading motivation, difficulties encountered, as well as the use and perception of digital platforms and visual activities. The items were in closed and semi-open formats, to allow both the quantification of data and the expression of students’ opinions in detail (Marin, 2015, p. 22).

In addition, digital tools were evaluated according to the degree of engagement, efficiency in facilitating text comprehension and stimulating creativity, so as to determine their impact on the visible learning process. This combination of tools allows for an integrative approach, which capitalizes on both quantitative and qualitative data (Marin, 2016, p. 45).

Research procedure

The research was conducted over the course of a semester, with the agreement of the institution's management and in compliance with ethical norms. Students completed online questionnaires using the Google Forms Platform. The data were subsequently centralized, coded

and statistically and thematically analyzed to highlight reading patterns and the use of digital technologies (Marin et al, 2015, p. 112).

Data analysis was performed using descriptive and comparative methods. Frequencies, percentages and distributions of responses were calculated, and the identified patterns were interpreted in relation to the specialized literature on literary-artistic education and visible learning technologies (Marin et al, 2014, p. 78). This approach allowed the development of relevant conclusions for teaching practice and for the integration of digital resources in teaching literature.

Discussion and results

The analysis of students' responses highlights a moderate interest in reading literary texts, with the majority declaring that they read sometimes. A small group of students show a strong passion for reading, while a significant segment shows low or very low interest. This distribution suggests the need for pedagogical strategies that stimulate constant reading and transform the reading activity into an attractive and meaningful experience (Callo et al, 2016, p. 34).

The frequency of reading outside of school indicates that most students read rarely or only occasionally, and only a small percentage engage in reading daily. This confirms the correlation between intrinsic motivation for reading and the frequency with which students engage in extracurricular literary activities (Hadîrcă et al, 2016, p. 112).

Students' literary preferences show a predominant orientation towards prose and drama, while poetry is less attractive. At the same time, almost 40% of students do not have well-defined preferences, indicating both an openness to exploring different genres and a need for didactic guidance for the development of literary taste (Hadîrcă et al, 2018, p. 87).

The main motivation for reading is curiosity, followed by school grades and teacher influence. This suggests that stimulating interest intrinsic value is essential, and teacher involvement can significantly increase student participation in reading activities (Marin, 2014, p. 134).

Regarding the difficulties encountered, students indicate lack of interest, language difficulties, complexity of ideas and cultural context. These obstacles highlight the need to personalize reading recommendations, provide explanatory support and adapt texts to the level of understanding and experience of each student (Marin, 2015, p. 112).

In relation to the use of digital technologies, most students use digital platforms and resources moderately or occasionally, and their impact is perceived positively: multimedia materials make lessons more

interesting, facilitate understanding and stimulate creativity. Visual activities, such as concept maps, multimedia presentations and infographics, increase affective involvement and the ability to interpret literary texts (Marin, 2016, p. 78).

Students also show a favorable attitude towards digital activities, considering that they contribute to the development of critical thinking and to experiencing the emotion of the text. The level of involvement in digital activities is moderate to high, and most students express their desire to participate in more technology-based activities (Marin et al, 2015, p. 112).

The results confirm that the integration of visible learning technologies amplifies both the cognitive and the affective and social dimensions of the literary reception process. Students acquire skills in analysis, interpretation and critical evaluation, while interactive and collaborative activities facilitate the development of literary empathy and the ability to relate their own experiences to the themes and situations in the texts (Marin et al, 2014, p. 45).

Conclusions and recommendations

The study on the reception of literary texts by high school students, in the context of the integration of digital technologies and visible learning strategies, highlighted a complex set of cognitive, affective and social factors that influence student involvement and the development of literary skills. The results obtained show that students show a moderate interest in reading, with a small segment of passionate readers and a significant percentage with low motivation. This emphasizes the need to implement differentiated teaching methods, which stimulate constant reading and transform reading into a pleasant and meaningful experience (Callo et al, 2016, p. 34).

The integration of digital technologies in the literary learning process was perceived as beneficial by most students. Multimedia materials, visual applications, interactive platforms and collaborative activities contributed to increasing affective involvement, developing creativity and deepening the understanding of literary texts. Students reported that these resources facilitate the identification of literary themes and symbols, the argumentation of their own opinions and the development of critical thinking (Hadîrcă et al, 2019, p. 780).

Intrinsic motivation, curiosity and teacher involvement have proven to be determining factors in literary reception, while difficulties related to language, the complexity of ideas and the cultural context require adaptive pedagogical interventions and additional support for students (Hadîrcă et al, 2018, p. 112). Thus, reading activities must be varied, interactive and allow for the personalization of the educational

experience, in order to support students with different levels of competence.

From a social perspective, digital and collaborative activities contribute to the development of communication skills, literary empathy and the exchange of perspectives between students. This approach favors the intersubjective reception of literary texts and the development of a culture of critical and reflective dialogue (Marin, 2013, p. 134).

Based on these findings, the research proposes the following recommendations for teachers:

- Systematic integration of visible learning technologies in all stages of the teaching process, using digital tools that stimulate text analysis, critical thinking and affective involvement (Marin, 2015, p. 45).
- Development of adaptive teaching strategies, which take into account the diversity of learning styles, level of competence and interests of students, for an active and reflective literary reception (Marin, 2016, p. 112)].
- Continuous training of teachers for the efficient use of digital resources, innovative methodologies and formative and summative assessment tools (Marin et al, 2015, p. 87).
- Promotion of collaborative reading and critical discussions through digital platforms, which facilitate the exchange of opinions and the development of literary argumentation (Marin et al, 2014, p. 112).
- Creating a clear and detailed assessment framework for literary reading skills, with specific indicators for the cognitive, affective and social dimensions of the learning process (Callo et al, 2016, p. 34).
- Documenting and disseminating good practices through open educational resources se, methodological guides and curriculum programs, to facilitate the application of research results in diverse educational contexts (Hadîrcă et al, 2019, p. 78).

In conclusion, the research confirms that the reception of literary texts is a multidimensional process, influenced by cognitive, affective, social and technological factors. Innovative teaching strategies, combined with digital technologies and formative assessments, amplify student involvement and the efficiency of the learning process, contributing to the development of literary skills, critical thinking and creativity (Hadîrcă et al, 2018, p. 134).

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NON-FORMAL METHODS AND STRATEGIES FOR DEVELOPING SOCIO-EMOTIONAL SKILLS

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Abstract: *Socio-emotional development represents an essential dimension of contemporary education, while non-formal education provides valuable contexts for fostering these competencies. This study investigates parents' perceptions regarding the role of non-formal activities in supporting the socio-emotional development of primary school students. The research is based on a quantitative approach and involved the administration of a structured questionnaire to a sample of 53 parents whose children participate in various non-formal educational activities. The results indicate that, according to parents' perceptions, participation in non-formal education is associated with improvements in social interaction, cooperation, emotional expression, and self-confidence. At the same time, the perceived impact varies depending on the type and frequency of activities as well as the child's individual characteristics. Overall, the findings highlight the potential of non-formal education to complement formal learning and to support the holistic development of students.*

Keywords: *non-formal education; socio-emotional development; primary school students; emotional intelligence; parental perceptions; social skills.*

Introduction

The development of students' socio-emotional skills represents an essential dimension of contemporary education, and non-formal education provides valuable contexts for cultivating these

competencies. Through flexible and experiential educational approaches—such as play-based learning, cooperation, artistic activities, volunteering, and intergenerational experiences—students can develop emotional intelligence, empathy, self-regulation abilities, and social responsibility. These pedagogical strategies contribute to the formation of well-balanced personalities and support students' active integration into their communities.

Play-based learning and experiential activities represent some of the most effective methods for fostering emotional intelligence. Play creates a natural framework for emotional expression and social interaction, facilitating the development of empathy, communication skills, and emotional regulation strategies. Playful activities such as simulations, role-playing, and interactive exercises allow students to experience social situations within a safe environment, promoting the development of prosocial behaviors and encouraging reflection on their own emotions. In this context, Blândul (2021) highlights the role of play-based learning and non-formal methods in creating educational contexts adapted to students' emotional development and in improving pedagogical practices. Experiential activities complement these approaches through their applied and reflective character, offering opportunities for direct engagement in community projects, thematic excursions, or service-learning activities. Furthermore, the integration of digital technologies in non-formal education facilitates the development of socio-emotional competencies through interactive platforms and social simulations, which allow students to practice emotional skills in controlled virtual environments adapted to their needs (Botnar, 2021).

Cooperative learning and mentoring also play an important role in the development of socio-emotional competencies. This approach involves students in group activities aimed at achieving shared objectives, promoting collaboration, responsibility, and mutual respect. Through continuous interaction and the assumption of different roles within a team, students develop communication skills, empathy, and conflict management abilities. Clichici (2020) emphasizes that cooperative learning stimulates students' active engagement and contributes to strengthening relationships based on trust and solidarity. Group activities such as educational projects, debates, or simulation games support the development of critical thinking and negotiation skills. At the same time, such learning contexts contribute to the development of intercultural competencies, encouraging students to understand and respect cultural diversity. In this regard, Dorobanțu-Dina (2022) highlights that interaction with individuals from diverse cultural

backgrounds contributes to the formation of an open and tolerant identity capable of valuing diversity.

Artistic and creative activities constitute another important area of non-formal education, significantly contributing to students' socio-emotional development. Educational theatre, visual arts, and music provide students with opportunities to express emotions, explore personal identity, and develop empathy. Participation in theatrical activities involves assuming different roles and exploring multiple perspectives, which stimulates understanding of interpersonal relationships and promotes reflective thinking (Bucun & Vasilachi, 2020). By interpreting characters and exploring diverse social situations, students learn to manage emotions and develop emotional flexibility. Similarly, engaging in visual arts allows students to express their inner experiences while developing imagination and self-reflection abilities. Chistol (2019) argues that non-formal education creates favorable contexts for creative exploration and personal expression, thereby supporting the development of emotional self-regulation and resilience. Music, as a universal form of emotional communication, fosters cooperation, emotional sensitivity, and emotional synchronization within group activities (Bucun & Vasilachi, 2020).

Volunteering and community involvement also represent important tools for developing empathy and social responsibility. Through participation in volunteer activities, students have the opportunity to interact directly with diverse social realities and to better understand community needs. Volunteer projects, such as awareness campaigns, charitable activities, or support initiatives for vulnerable individuals, stimulate the development of solidarity and civic engagement. In this regard, Vasilachi (2020) highlights the role of non-formal education in fostering active social awareness and in developing both cognitive and affective empathy. Participation in such activities also contributes to the development of communication skills, teamwork abilities, and emotional resilience. Reflecting on volunteering experiences—through guided discussions or reflective journals—facilitates emotional integration and strengthens the process of personal development.

Another important element supporting socio-emotional development is represented by intergenerational experiences and collaborative learning. Interaction between students and individuals belonging to different generations provides valuable opportunities for learning and for developing empathy. Intergenerational activities, such as traditional craft workshops, oral history projects, or storytelling sessions, facilitate the transmission of cultural values and promote mutual respect. Virva (2021) highlights the role of non-formal educational institutions, such

as Children's Palaces and Clubs, in facilitating these interactions and promoting reciprocal learning between generations. At the same time, collaborative learning involves students' participation in shared tasks that require communication, negotiation, and the assumption of complementary roles, thereby contributing to the development of social and emotional competencies.

In conclusion, non-formal education offers a wide range of pedagogical methods and strategies that support the development of students' socio-emotional skills. By integrating play-based learning, cooperation, artistic activities, volunteering, and intergenerational experiences, the educational process becomes more relevant, interactive, and student-centered. These approaches contribute to the formation of empathetic, responsible individuals capable of effectively managing emotions and social relationships within a complex and constantly evolving society.

The text also outlines the introductory and methodological framework of a study focused on analyzing parents' perceptions regarding the role of non-formal education in supporting students' socio-emotional development. The research topic emerges from the growing interest in educational approaches that complement formal schooling, particularly in the context in which both academic literature and educational practice emphasize the importance of the holistic development of the child. Non-formal education is understood as an alternative yet structured learning environment that encourages autonomy, flexible interaction with others, and emotional expression in contexts that are less rigid than traditional classroom settings. From this perspective, the study aims to highlight parents' opinions regarding the perceived impact of non-formal activities on their children's emotional and social development.

Research

The research adopts a quantitative approach and is based on the administration of a structured questionnaire consisting of 20 closed-ended questions to a sample of 53 parents. This methodological choice aims to capture general trends and identify dominant opinions regarding the relationship between children's participation in non-formal activities and the development of socio-emotional competencies. Through this approach, the study seeks to provide a coherent overview of how parents evaluate the contribution of non-formal education to their children's development.

The investigative framework is organized around several general and specific objectives that guide the design of the questionnaire and the interpretation of the data. The first general objective focuses on identifying and analyzing parents' perceptions of non-formal education

as a favorable environment for socio-emotional development. The study examines the extent to which parents believe that participation in such activities contributes to the development of dimensions such as self-confidence, empathy, emotional self-control, and interpersonal skills. This objective is based on the premise that emotional and social development are closely interconnected.

The second objective aims to determine the frequency and types of non-formal activities in which children participate, based on parents' reports. The analysis considers the diversity of these activities—including artistic, sports, recreational, volunteer-based, or thematic clubs—as well as their place in relation to the regular school schedule. At the same time, this objective includes the evaluation of parents' perceptions regarding the organization and effectiveness of these activities, as well as the role played by teachers or other professionals involved.

The third objective involves identifying potential correlations between participation in non-formal education and the manifestation of certain socio-emotional behaviors observed by parents. Without establishing causal relationships, the research aims to explore whether consistent involvement in non-formal activities is associated with improved cooperation, greater emotional openness, a proactive attitude in social relationships, and tolerance toward differences. Another important objective concerns the degree of parental involvement in their children's extracurricular life, particularly the extent to which parents discuss non-formal activities with their children, are aware of their experiences, and support their participation. This aspect is relevant because the family is considered the primary educational environment and a key factor influencing children's attitudes toward learning and personal development.

Based on these objectives, several working hypotheses were formulated, drawing on both the academic literature and observations from educational practice. The first hypothesis states that parents whose children frequently participate in non-formal activities perceive them as displaying better-developed emotional traits, particularly in terms of emotional expression and regulation. The second hypothesis suggests that participation in cooperative or volunteering activities is associated, in parents' perceptions, with the development of empathy and civic responsibility. A third hypothesis assumes that parents who frequently discuss non-formal activities with their children are more likely to observe positive behavioral changes. Additionally, it is assumed that improvements in children's social behavior are associated by parents with participation in structured non-formal activities that have clearly defined educational objectives. Finally, the last hypothesis

suggests that most parents support the expansion of non-formal education within the school curriculum as a complementary component of formal education and as a means of supporting students' personal and social development.

Overall, the text outlines a well-structured research framework aimed at understanding how parents perceive the contribution of non-formal education to their children's socio-emotional development and at highlighting its relevance in the current educational context.

The sample used in the study consisted of 53 parents, selected based on the criterion that their children were involved in non-formal educational activities. The participants were parents of primary school students, and the selection aimed to ensure a reasonable diversity in terms of gender, age, place of residence, educational level, occupation, and family structure. The presentation of the sample characteristics serves to provide a descriptive profile of the participants, without anticipating interpretations or conclusions regarding the responses they provided.

Regarding gender distribution, of the 53 respondents, 39 were women (73.6%) and 14 were men (26.4%). Such a distribution is commonly observed in educational studies involving parents, as women generally show greater willingness to participate in this type of research. Data were collected through the voluntary completion of the questionnaire, without attempting to achieve gender balance, the primary objective being to capture the perceptions of parents who chose to participate in the study.

From the perspective of age distribution, respondents were grouped into four age categories. Thus, 9 parents (16.9%) were between 25 and 30 years old, 19 parents (35.8%) were between 31 and 35 years old, 18 parents (33.9%) were between 36 and 40 years old, and 7 parents (13.2%) were over 40 years old. This distribution highlights a significant proportion of parents within the 31–40 age group, which typically corresponds to the period when adults are professionally active and have children in the early years of schooling.

With regard to the place of residence, 32 respondents (60.3%) lived in urban areas, while 21 parents (39.7%) were from rural areas. This distribution indicates a relatively balanced representation of the two residential environments, although it does not imply similar conditions in terms of access to educational resources. Including participants from both environments allows for a more comprehensive descriptive overview without conducting comparisons between the two categories at this stage.

The educational level of respondents was reported in the introductory section of the questionnaire. Among the 53 parents, 9 (17%) had

completed secondary education (high school or vocational school), 28 (52.8%) held a bachelor's degree, and 16 parents (30.2%) had completed postgraduate studies, such as master's programs or specialized training courses. This variable highlights the diversity of educational backgrounds within the sample without implying a direct relationship with the type or frequency of children's participation in non-formal activities.

In terms of occupation, participants were employed in a variety of professional fields. Specifically, 12 parents (22.6%) worked in the field of education (teachers or auxiliary staff), 10 parents (18.9%) were employed in technical fields such as engineering, information technology, or construction, and 9 respondents (17%) worked in the medical sector (physicians, nurses, or pharmacists). Additionally, 6 parents (11.3%) were employed in public administration or financial services, 7 respondents (13.2%) worked in the commercial sector (sales, marketing, or logistics), while 9 parents (17%) had other occupations, including self-employed professionals, skilled workers, or agricultural workers. The socio-professional diversity of the sample reflects the variety of family contexts from which the children indirectly involved in the study originate.

Family structure was analyzed based on the number of children in the household. Thus, 31 respondents (58.5%) had one child, 17 parents (32%) had two children, and 5 parents (9.5%) had three or more children. This information contributes to outlining the family context in which children develop, without assuming a direct influence on the perceptions expressed by parents in the questionnaire.

Another criterion considered in describing the sample was the level of parental involvement in children's educational activities. This dimension was examined through a direct question with standardized response options. Twenty-four parents (45.3%) reported frequent involvement in supporting their child's education, such as helping with homework, attending school meetings, or supporting participation in extracurricular activities. Twenty respondents (37.7%) reported occasional involvement, while 9 parents (17%) indicated limited or sporadic involvement. At this stage of the analysis, these data are presented strictly descriptively and are not correlated with other research variables.

Regarding children's participation in non-formal activities, all 53 parents confirmed that their child had been involved in at least one form of non-formal education during the previous 12 months. The activities mentioned covered a wide range of areas, including artistic activities (drawing, painting, theatre), music lessons, sports activities (dance, football, swimming), reading or personal development clubs,

as well as volunteering projects or educational camps. The questionnaire did not impose a strict classification of these activities, allowing respondents the freedom to specify the types of activities in which their children had participated.

Overall, the collected data reveal a sample characterized by demographic and socio-professional diversity. The information presented provides a descriptive overview of the profile of parents participating in the study and establishes a factual framework for the subsequent analysis of the data, without anticipating relationships between the variables under investigation.

Parents' Perceptions of the Contribution of Non-Formal Education to Children's Socio-Emotional Development

Question

1

How often does your child participate in non-formal activities (e.g., clubs, camps, workshops)?

The analysis of the responses provided by the 53 parents participating in the study offers an initial perspective on how non-formal educational activities are integrated into the educational experiences of primary school students. This question aimed to identify the frequency with which children participate in such activities, considering their role in complementing the formal educational process and supporting the development of socio-emotional competencies.

The distribution of responses indicates diversity in terms of children's access to and participation in non-formal activities. The two extremes of the response scale "never" and "daily" were selected by the same number of respondents, namely 11 parents. This distribution suggests the existence of different realities within the sample: on the one hand, a group of children who do not participate in non-formal activities at all, and on the other hand, a group for whom these activities are consistently integrated into their daily routines.

The percentage of 20.7% of parents who reported that their children do not participate in non-formal activities suggests the presence of potential barriers to accessing such educational programs. Factors that may contribute to this situation include the limited availability of activities in certain localities, a demanding school schedule, a lack of interest on the part of the child, or logistical and financial constraints. At this stage of the research, these aspects are mentioned only as possible contextual explanations, without drawing definitive conclusions.

At the opposite end of the spectrum, a similar proportion of parents reported that their children participate in non-formal activities on a daily basis. This situation suggests the consistent integration of such activities into children's daily routines, either through after-school

educational programs or through participation in artistic, sports-related, or personal development courses conducted regularly. Such a level of engagement indicates frequent exposure to diverse educational contexts that may contribute to the development of social, emotional, and relational competencies.

Overall, the results highlight the existence of different patterns of participation in non-formal education among primary school children, reflecting the diversity of family and educational contexts in which they develop.

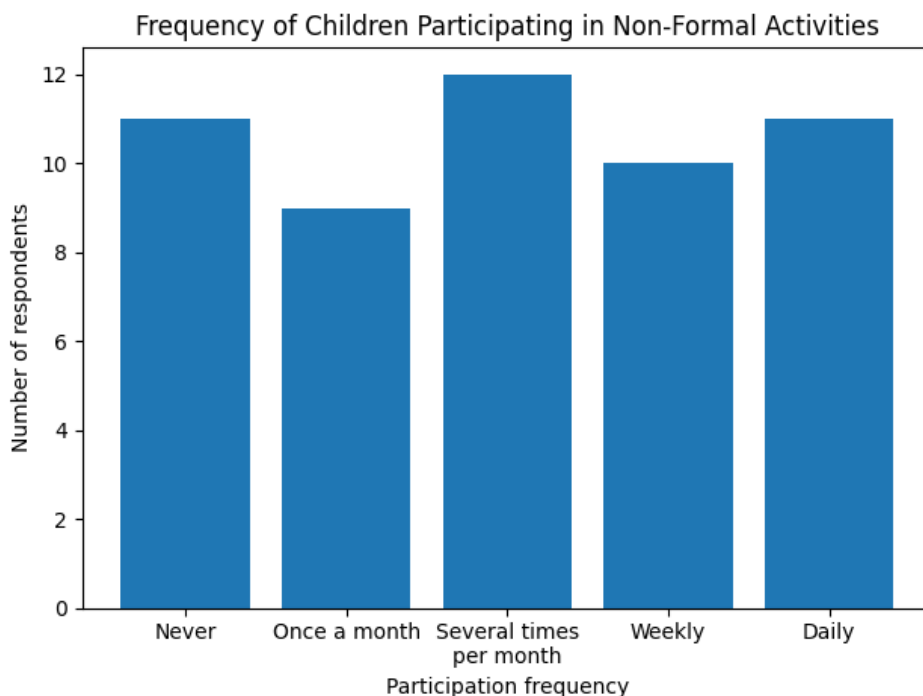


Figure 1. Frequency of Children Participating in Non-Formal Activities

Between the two extremes of participation frequency in non-formal activities, three intermediate categories can be identified. Thus, 9 parents reported that their children participate in such activities once a month. This category represents 17% of the total respondents and may suggest occasional involvement, possibly dependent on family availability, the existing educational offer, or the organization of the child's schedule. The presence of this category indicates that, for some families, access to non-formal activities is limited or occurs only sporadically.

The largest category is represented by 12 parents (22.6%) who selected the option "several times per month." This choice reflects a relatively consistent form of participation, although without a strictly weekly

frequency. In many cases, such involvement may be associated with participation in thematic workshops, weekend courses, or activities organized periodically within educational centers. The fact that this option was the most frequently selected suggests a tendency to integrate non-formal activities in a manner adapted to the family's schedule and daily routines.

Question 2

To what extent do you consider that these activities contribute to the emotional development of your child?

The analysis of responses indicates a relatively balanced distribution of parents' opinions regarding the contribution of non-formal activities to children's emotional development. Thus, 11 respondents (20.7%) considered that these activities do not contribute at all to emotional development, while the same number of parents (20.7%) believed that their impact is very high.

Between these two extremes, several intermediate positions were identified. Ten parents (18.9%) evaluated the contribution of non-formal activities as very limited, 11 respondents (20.7%) considered the impact moderate, while another 10 parents (18.9%) indicated a considerable contribution. This varied distribution suggests the existence of diverse perceptions among parents, possibly influenced by the types of activities in which children participate, the frequency of their involvement, or parents' expectations regarding the outcomes of non-formal education.

Approximately 40% of respondents fall within the category of perceiving a low impact (the options "not at all" and "very little"), which may indicate difficulty in identifying clear emotional changes or a weaker association between the activities carried out and the development of children's affective dimensions. At the same time, 20 parents consider that these activities have a strong impact on emotional development, highlighting the presence of a significant group that recognizes the formative potential of non-formal education.

The intermediate category ("moderate") is among the most frequently selected responses, suggesting that for many parents, non-formal education is perceived primarily as a complementary element of the educational process rather than as a decisive factor in emotional development.

Question 3

Do you observe an improvement in your child's interaction with other children after participating in non-formal activities?

The responses provided by parents reflect how they perceive the social impact of children's participation in non-formal activities. A total of 12 parents (22.6%) indicated that they did not observe any improvement

in their child's interaction with other children, while 8 respondents (15.1%) considered that the changes were very limited.

Overall, 20 parents (37.7%) perceived the social impact of non-formal activities as low or nonexistent. On the other hand, 11 parents (20.7%) selected the option "sometimes," suggesting that improvements in social interaction are observed only in certain situations or contexts.

Furthermore, 10 parents (18.9%) responded "generally yes," while 12 respondents (22.6%) considered that the improvement was significant ("yes, very much"). Consequently, 22 parents (41.5%) perceived a clear positive impact of non-formal activities on children's social interaction.

The relatively balanced distribution of responses indicates that the social effects of non-formal education are perceived differently by parents. Moreover, the relatively high frequency of the response "sometimes" suggests a nuanced perception, according to which the development of social interaction skills may depend on factors such as the type of activity, the context in which it takes place, or the individual characteristics of the child.

Question 4

Do you consider that non-formal education helps your child express their emotions more easily?

The results reveal a significant diversity of parental perceptions. Eleven respondents (20.7%) selected the option "no, on the contrary," while 8 parents (15.1%) chose the response "not really." Thus, approximately 36% of respondents believe that non-formal activities do not significantly contribute to facilitating emotional expression.

At the same time, 12 parents (22.6%) selected the option "I am not sure," reflecting a certain degree of uncertainty in evaluating this type of effect. Assessing emotional development can be challenging for parents, particularly when changes are subtle or occur over a longer period of time.

On the other hand, 11 respondents (20.7%) considered that non-formal education contributes to emotional expression to some extent, while another 11 parents (20.7%) believed that this impact is clear and evident. Overall, approximately 41% of respondents perceive a positive influence of non-formal activities on the expression of emotions.

The results outline a balanced picture, in which some parents observe positive effects, others express reservations, and a significant segment remains uncertain. This situation suggests that emotional expression is perceived as a complex process, which is difficult to directly associate with participation in non-formal activities in the absence of educational interventions explicitly focused on the affective dimension.

Question 5

Do the non-formal activities in which your child participates promote empathy?

The distribution of responses is relatively uniform, reflecting the diversity of parents' perceptions. Thus, 11 respondents (20.7%) believe that non-formal activities do not contribute at all to the development of empathy, while 10 parents (18.9%) consider that this contribution is very limited. Overall, approximately 39.6% of respondents do not perceive a clear influence of these activities on the development of empathy.

A total of 11 parents (20.7%) selected the option "sometimes," suggesting that this dimension is perceived as dependent on the context or on the type of activities carried out.

On the other hand, 10 respondents (18.9%) indicated that empathy is promoted frequently, while 11 parents (20.7%) stated that this occurs consistently. Therefore, an important segment of the sample perceives a connection between non-formal activities and the development of empathy.

Considering the relational nature of empathy, it is possible that this competence is particularly associated with activities involving direct interaction, collaboration, or the assumption of social roles, such as theatrical activities, role-playing games, or volunteer projects.

Question 6

How important do you consider non-formal activities for the development of your child's self-confidence?

This question aimed to assess parents' perceptions regarding the relationship between participation in non-formal activities and the development of children's self-confidence. The distribution of responses is relatively balanced across the five proposed options.

Thus, 11 parents (20.7%) consider these activities to be unimportant for the development of self-confidence, while 9 respondents (17%) evaluate them as slightly important. At the same time, 12 parents (22.6%) indicated that their importance is moderate.

A total of 10 respondents (18.9%) consider non-formal activities to be important, while 11 parents (20.7%) perceive them as very important for the development of children's self-confidence.

The results highlight the presence of relatively divided opinions among parents. Approximately 40% of respondents consider non-formal activities to be important or very important for the development of self-confidence, suggesting recognition of the formative potential of these educational contexts. At the same time, a similar proportion of respondents perceive a weaker relationship between participation in non-formal activities and the development of this dimension.

This diversity of opinions may reflect both the variety of activities in which children participate and the different ways in which parents interpret the concept of self-confidence or observe its manifestations in children's behavior.

Question 7

Have you noticed better emotional regulation in your child following their involvement in non-formal education?

This question aimed to explore the dimension of emotional self-regulation, considered a key component of children's affective development. The distribution of responses reveals a relatively balanced structure of parental perceptions. Thus, 11 parents (20.7%) indicated that they did not observe any change in the way their child manages emotions, while 9 respondents (17%) reported that the observed changes were very limited.

On the other hand, 12 parents (22.6%) noticed some improvements in emotional regulation, 10 respondents (18.9%) observed visible changes, and 11 parents (20.7%) reported clear improvements. Consequently, approximately 40% of respondents indicate a noticeable or significant improvement in the way their child manages emotions, suggesting a perceived positive development associated with participation in non-formal activities.

At the same time, 20 parents (approximately 38%) did not observe relevant changes or considered the changes insignificant. This polarized distribution suggests that emotional self-regulation may be difficult to observe directly from an adult perspective and often requires attention to subtle behavioral manifestations. The intermediate option—"some improvements"—was the most frequently selected, indicating a moderate and nuanced perception of the impact of these activities.

Question 8

Do you believe that these activities contribute to the development of your child's sense of responsibility?

Responsibility represents one of the fundamental social competencies, and this question aimed to identify whether parents associate participation in non-formal activities with the development of responsible behavior. The responses indicate a relatively uniform distribution of perceptions.

Thus, 11 parents (20.7%) answered "no," while 9 respondents (17%) selected the option "rarely." At the same time, 11 parents (20.7%) believe that these activities contribute "sometimes" to the development of responsibility, and another 11 parents (20.7%) selected the option "often." A similar number of respondents (11 – 20.7%) indicated that

these activities “always” contribute to the development of the child’s sense of responsibility.

The nearly symmetrical distribution of responses highlights the existence of divided opinions among parents. Thus, 22 respondents expressed a strongly positive perception (“often” and “always”), while 20 parents considered the impact to be low or absent (“no” and “rarely”). The intermediate category (“sometimes”) reflects the recognition of a possible influence, although not perceived as consistent.

These results may be related to the types of non-formal activities in which children participate, as activities involving task responsibility, rule-following, or group collaboration are more likely to contribute to the development of responsibility than those with a predominantly recreational character.

Question 9

To what extent does your child cooperate better with others as a result of participating in non-formal activities?

This question focused on cooperation as an indicator of social competence and the child’s ability to function effectively in group contexts. The distribution of parents’ responses reveals a pattern similar to that observed in the previous questions.

Thus, 11 parents (20.7%) indicated that they did not observe any improvement in cooperation, while 9 respondents (17%) considered the changes to be minor. At the same time, 12 parents (22.6%) believe that improvement occurs only occasionally.

On the other hand, 10 parents (18.9%) stated that participation in non-formal activities contributes considerably to the development of cooperation, while 11 respondents (20.7%) believe that this contribution is very significant. Overall, approximately 40% of parents perceive a moderate or strong positive impact on the child’s ability to cooperate with others, whereas 37.7% do not observe a significant change.

It is possible that parents who reported low participation of their children in non-formal activities may similarly perceive a weaker impact on the development of cooperative skills, as limited exposure to collaborative contexts may reduce opportunities for developing such competencies.

Question 10

Has participation in artistic activities (theatre, music, painting) positively influenced your child’s emotional development?

This question aimed to evaluate the impact of a specific category of non-formal activities—artistic activities—on children’s emotional

development. Parents' responses indicate a relatively balanced distribution between positive and negative perceptions.

Thus, 11 parents (20.7%) indicated that artistic activities had no impact on their child's emotional development, while 9 respondents (17%) considered that their influence was very limited. At the same time, 12 parents (22.6%) believed that the impact was moderate.

On the other hand, 10 parents (18.9%) evaluated the influence of artistic activities as significant, while 11 respondents (20.7%) considered the impact to be very high. Therefore, 21 parents (39.6%) believe that these activities have had a considerable influence on their child's emotional development.

These results may be explained both by the diversity of children's educational experiences and by the ways in which parents observe and interpret their children's emotional expressions. In the case of artistic activities, the effects may be more subtle and more difficult to evaluate compared with other types of competencies.

Question 11

To what extent do you consider volunteer activities useful for the social development of your child?

The analysis of responses highlights a balanced distribution of parental perceptions regarding the usefulness of volunteer activities in children's social development. Thus, 11 respondents (20.7%) consider these activities to be useless, while 9 parents (17%) evaluate them as slightly useful.

At the same time, 12 respondents (22.6%) consider volunteer activities to be moderately useful for social development, while 10 parents (18.9%) evaluate them as useful. Another 11 respondents (20.7%) consider them to be very useful.

This relatively uniform distribution suggests the existence of diverse perceptions among parents, without a clearly dominant opinion emerging. Approximately 37.7% of respondents consider that volunteering has little or no usefulness, which may indicate a weak association between this type of activity and the child's educational process or a limited experience with such activities.

On the other hand, 39.6% of parents evaluate volunteering as useful or very useful for social development, reflecting recognition of the role these activities play in the development of character, civic responsibility, and social interaction skills. This positive perception may be influenced by children's concrete experiences in community projects, support activities, or initiatives involving social engagement.

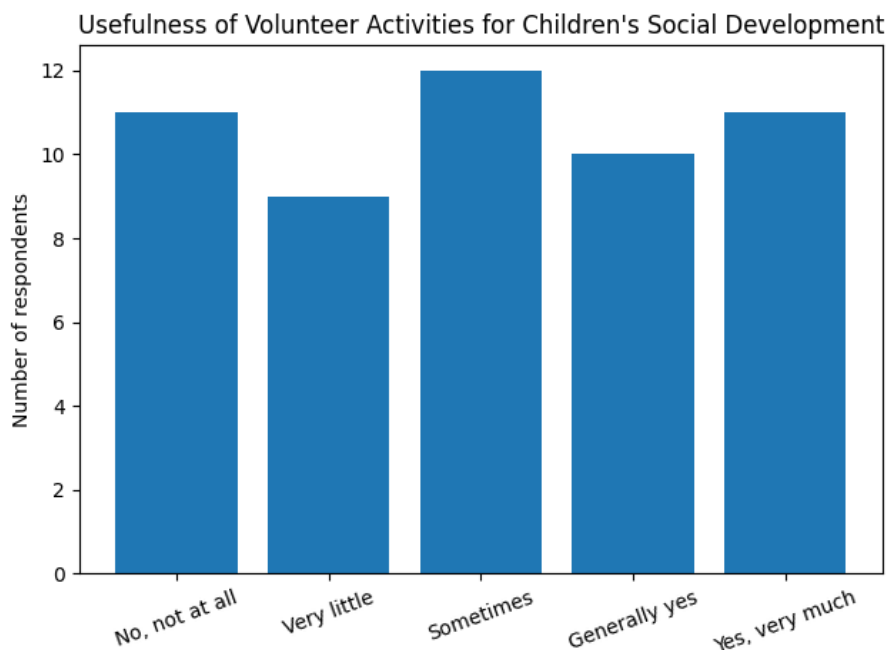


Figure 3. Usefulness of Volunteer Activities for Children's Social Development

The most frequently selected response, “moderately useful” (22.6%), reflects a balanced parental perception according to which volunteer activities are recognized as having educational value and formative potential, without necessarily being considered an essential component of a child's social development in all cases. Such an evaluation may be associated either with the child's occasional participation in these activities or with the fact that their effects are perceived more indirectly and are more difficult to assess compared with other competencies.

Question 12

Have you observed an increase in tolerance toward other children following participation in such activities?

The distribution of responses also indicates a relatively balanced structure of parental perceptions. Thus, 10 parents (18.9%) stated that they had not observed any increase in tolerance, while another 10 respondents (18.9%) considered that the observed changes were very limited. Twelve parents (22.6%) selected the option “sometimes,” 10 respondents (18.9%) indicated the response “generally yes,” and 11 parents (20.7%) chose the option “clearly yes.” This distribution suggests that parents' opinions are relatively evenly distributed across negative, moderate, and positive evaluations, without any single perspective clearly prevailing.

Approximately 40% of respondents stated that they had not observed changes or had noticed only very weak indications of increased tolerance toward other children. Such a perception may be explained by the fact that not all non-formal activities are explicitly oriented toward cooperation, dialogue, or interaction with diversity. Moreover, tolerance represents a subtle social competence that is difficult to observe directly, and its manifestations may vary depending on the interaction context and the child's individual characteristics. It is also possible that some parents do not have sufficient concrete situations to accurately evaluate this dimension, particularly when they are not direct observers of their child's interactions outside the family environment.

On the other hand, 21 parents (39.6%) expressed a positive perception, selecting the options "generally yes" and "clearly yes." These respondents appear to have identified signs of greater openness toward others, a more empathetic attitude, fewer conflicts, and better integration within peer groups. Such transformations may be associated with non-formal activities that encourage cooperation, role-taking, teamwork, or participation in community initiatives. The option "sometimes," selected by 12 parents (22.6%), reflects an intermediate position, indicating recognition of certain improvements without considering them sufficiently consistent or evident to formulate a definitive evaluation.

Question 13

Do you believe that non-formal education helps your child better understand their own emotions?

Responses to this question also reveal a relatively balanced distribution among negative, moderate, and positive perceptions. Thus, 11 parents (20.7%) believe that non-formal education does not contribute at all to a better understanding of one's own emotions, while 9 respondents (17%) consider that the support provided in this regard is limited. In contrast, 10 parents (18.9%) evaluated the effect as fairly significant, and 11 respondents (20.7%) considered it to be very significant. The intermediate option, "to some extent," was selected by 12 respondents (22.6%).

This distribution suggests that understanding one's own emotions represents a sensitive and difficult dimension to evaluate from an external perspective. The nearly uniform distribution of responses may reflect both diverse educational experiences and the absence of behavioural indicators that are easily identifiable by parents. Moreover, it is possible that certain non-formal activities did not explicitly include components focused on emotional reflection, which may reduce the visibility of potential effects in this direction.

Question 14

To what extent do you believe that non-formal activities stimulate your child's autonomy?

Autonomy represents an important dimension of personal development, and parents' responses indicate a balanced distribution of perceptions. Thus, 11 respondents (20.7%) believe that non-formal activities do not stimulate children's autonomy at all, while 10 parents (18.9%) consider that this contribution is limited. In contrast, 10 respondents (18.9%) believe that the impact is significant, and 11 parents (20.7%) evaluate it as very significant. The option "moderate" was selected by 11 respondents (20.7%).

This distribution suggests that perceptions of autonomy largely depend on the specific nature of the activities in which the child participates, the child's individual characteristics, and parents' expectations. Activities involving personal initiative, the completion of practical tasks, decision-making, or the assumption of concrete responsibilities are more likely to be associated with the development of autonomy. However, not all children consistently benefit from such educational contexts.

Question 15

How often do you discuss with your child the non-formal activities in which they participate?

This question provides relevant information regarding the degree of parental involvement in reflecting on and supporting children's non-formal educational experiences. Thus, 11 parents (20.7%) reported that they never discuss these activities with their child, while 9 respondents (17%) indicated that such conversations occur rarely. At the opposite end, 10 parents (18.9%) stated that they frequently discuss non-formal activities with their child, and 11 respondents (20.7%) indicated that they do so very often. The most frequently selected option was "sometimes," chosen by 12 parents (22.6%).

The results suggest that for a significant portion of the sample, discussions about non-formal activities occur occasionally or infrequently. This situation may also influence parents' ability to accurately assess the real impact of these experiences on their child's development. Consistent communication between parent and child may represent an important factor in recognizing progress, supporting reflection on lived experiences, and reinforcing their educational impact.

Question 16

Do you observe an improvement in your child's decision-making ability following involvement in these activities?

Decision-making ability represents an indicator of autonomy and functional maturation in children. The distribution of responses again highlights a relatively balanced pattern. Thus, 11 parents (20.7%) believe that there is no improvement, while 9 respondents (17%) consider that the observed progress is limited. At the same time, 12 parents (22.6%) indicated that such changes occur only sometimes, 10 respondents (18.9%) believe that improvement is generally noticeable, and 11 parents (20.7%) consider it to be clear and significant.

The results show that almost 40% of parents perceive a clear strengthening of their child's decision-making ability, while a similar proportion does not confirm the existence of such changes. This variation may be explained by the specific nature of the non-formal activities in which children were involved. Activities involving choice, planning, problem-solving, or assuming responsibility for the consequences of decisions are more likely to contribute to the development of this competence than activities that are predominantly passive or recreational.

Question 17

How valuable do you consider the support of teachers in promoting non-formal education?

Parents' perceptions regarding the role of teachers in supporting non-formal education are relevant for understanding the relationship between school and family in promoting this type of learning. Thus, 11 parents (20.7%) considered teachers' support to be not valuable at all, 9 respondents (17%) evaluated it as slightly valuable, while 11 parents (20.7%) selected each of the following options: "moderately valuable," "valuable," and "very valuable."

This symmetrical distribution suggests the existence of clearly divided opinions among respondents. Approximately 40% of parents consider teachers' support to be valuable or very valuable, which may reflect teachers' involvement in extracurricular projects, encouragement of children's participation, or support for complementary educational initiatives. At the same time, a similar proportion of respondents who perceive this support as limited or nonexistent may indicate communication gaps between school and family or limited teacher involvement in promoting non-formal education in certain contexts.

Question 18

Do non-formal activities contribute to the reduction of aggressive behaviors?

This question addresses an important aspect of emotional balance and social adaptation. A total of 11 parents (20.7%) believe that non-formal activities do not contribute at all to reducing aggressive behavior, while 9 respondents (17%) consider that the influence is very limited. At the

same time, 12 parents (22.6%) selected the option “sometimes,” 10 respondents (18.9%) perceived a considerable impact, and 11 parents (20.7%) evaluated the influence as very strong.

The results indicate a relatively balanced distribution between parents who recognize positive effects and those who do not observe significant changes. This perception may depend both on the child’s behavior prior to participation in non-formal activities and on the nature of the activities carried out. Activities that emphasize cooperation, emotional self-regulation, and the development of empathy may have more visible effects on reducing aggressiveness than activities that are individual or lack relational components.

Question 19

Does your child’s participation in non-formal activities provide opportunities to make new friends?

The formation of friendships represents a central aspect of socialization during childhood. Parents’ responses also indicate a balanced distribution in this case. Thus, 11 respondents (20.7%) stated that these activities never provide opportunities for forming new friendships, while 10 parents (18.9%) selected the option “rarely.” At the same time, 11 respondents (20.7%) considered that this occurs sometimes, 10 parents (18.9%) indicated the option “usually,” and 11 parents (20.7%) stated that such opportunities always arise.

The results suggest that non-formal activities are perceived as having real potential to facilitate social connections, although the effectiveness of this process appears to depend on the frequency of participation, the duration of activities, and their specific nature.

Question 20

Do you agree with the integration of more non-formal activities into the school program?

This question aimed to identify parents’ attitudes toward the possible expansion of non-formal activities within the school curriculum. The distribution of responses also indicates a relatively balanced structure. Thus, 11 parents (20.7%) stated that they do not agree with such integration, while 9 respondents (17%) indicated that they are rather opposed to it. The neutral option was selected by 12 parents (22.6%), while 21 respondents (39.6%) declared that they agree or strongly agree with integrating a greater number of non-formal activities into the school program.

Results

The results show that, although an important segment of parents expresses reservations or neutrality, a significant proportion supports the expansion of this type of activity. This openness may reflect

recognition of the value of non-formal education in children's holistic development, as well as the need to develop more flexible educational models that better respond to students' real needs.

Examples of Changes Observed by Parents in Children's Socio-Emotional Behaviors

The analysis of the responses collected through the questionnaire administered to the 53 parents highlights a series of observations regarding possible changes in children's socio-emotional behaviors following participation in non-formal activities. Without transforming these observations into causal conclusions or absolute generalizations, they allow the identification of certain developmental tendencies perceived by the respondents.

A first aspect noted by parents refers to a greater openness of children toward social interaction, particularly in contexts involving interaction with peers or friendship groups. Collaborative extracurricular activities, such as workshops, team projects, or role-playing activities, were associated with an increased initiative in communication and a greater willingness to engage socially. In this context, some parents observed a stronger tendency among children to express their opinions freely, yet respectfully, and to adapt more easily to collective situations.

Within the sphere of social interaction, several respondents also noticed an improvement in children's ability to cooperate, work in teams, and negotiate roles or responsibilities within shared activities. These developments appear to be particularly associated with participation in collaborative educational projects, such as those organized within school clubs or thematic camps. In such contexts, children seem to have learned to manage frustrations generated by differences of opinion more effectively and to value the contributions of other group members.

The responses also suggest that participation in non-formal activities may support the development of emotional self-regulation, especially in the case of children who previously experienced difficulties in controlling impulses or expressing emotional states appropriately. Some parents reported a reduction in episodes of anger, a greater capacity for self-calming, and an increased tendency to verbalize emotions rather than express them through maladaptive behaviors. However, these transformations were not observed uniformly, suggesting that perceived effects may vary depending on the child's personality, the type of activities involved, and the consistency of participation.

With regard to empathy and prosocial behaviors, a significant number of parents observed an increased concern among children for the emotional states of others, as well as a more tolerant attitude toward peers with different opinions, behaviors, or personal characteristics. These changes were frequently associated with participation in volunteer activities or educational projects focused on social themes, in which children were exposed to the diversity of human experiences. Such contexts appear to have fostered the consolidation of values such as mutual respect, acceptance of differences, and compassion.

Several parents also mentioned changes related to the assumption of responsibilities and the child's capacity for decision-making. They observed greater autonomy in organizing time, choosing activities, or completing everyday tasks. Due to its flexible nature and its emphasis on active participation, non-formal education can create contexts in which children are encouraged to initiate actions, make decisions, and assume the consequences of their choices, thereby contributing to the development of reflective thinking and a sense of self-efficacy.

Another aspect highlighted by respondents concerns an increase in self-confidence, particularly following participation in artistic, sports, or personal development activities. This development was reflected in behaviors such as assuming leadership roles within groups, expressing opinions more clearly, and showing willingness to participate in public activities such as performances, competitions, or exhibitions. Parents associated these manifestations both with the positive feedback received from activity coordinators and with children's experiences of success in achieving personal goals.

Alongside these positive aspects, some parents expressed reservations or indicated the absence of clearly observable changes in children's socio-emotional behaviors. These observations were expressed either in terms of stagnation or through cautious assessments suggesting improvements that are difficult to define precisely. Such responses may reflect either limited parental contact with their children's non-formal activities or the difficulty of systematically observing behavioral developments. In some cases, parents mentioned that the nature of the activities in which children participated did not favor the clear expression of socio-emotional dimensions, particularly when those activities were predominantly recreational and were not accompanied by reflection or educational guidance.

Conclusions

The research aimed to investigate the role of non-formal education in supporting the socio-emotional development of primary school students, drawing both on theoretical perspectives from the specialized

literature and on empirical data obtained through the administration of a questionnaire to a sample of 53 parents. The analysis of the results allows the formulation of relevant conclusions regarding parental perceptions, the areas in which non-formal education is considered beneficial, and the conditions that influence the effectiveness of this type of educational intervention.

The collected data indicate that, from the parents' perspective, the most visible changes associated with children's participation in non-formal activities occur in the areas of social interaction, cooperation, and the development of self-confidence. A significant number of respondents reported that children demonstrate a greater ability to interact with others, communicate more freely within groups, participate in collective activities, and assume roles or responsibilities within the projects in which they are involved. These manifestations may be considered indicators of favorable socio-emotional development and improved adaptation to the demands of group life.

At the same time, parents' responses suggest that non-formal education can contribute to the development of emotional intelligence, particularly by encouraging the appropriate expression of emotions and supporting affective self-regulation. Parents who observed improvements in children's ability to identify, express, or manage emotions describe an educational context that offers opportunities for reflection, interaction, and experiential learning. In this respect, non-formal activities appear to complement formal education by valuing formative dimensions that are not always sufficiently developed within the traditional curriculum.

Empathy and tolerance also emerge as dimensions supported by participation in non-formal activities, even though the results do not indicate a categorical predominance. The fact that a significant proportion of parents noticed a more open attitude toward others, greater acceptance of differences, and increased sensitivity to the needs of others indicates the considerable potential of non-formal education in fostering prosocial values. This aspect is particularly relevant in contemporary educational and social contexts characterized by diversity, where relational competencies and the capacity for harmonious coexistence are increasingly important.

The results of the research also reveal that autonomy, decision-making ability, and the assumption of responsibilities are areas in which parents have identified gradual but meaningful progress. Participation in activities that involve initiative, organization, choice, and reflection upon one's actions appears to support the development of essential life skills. When children are actively engaged in flexible and stimulating educational contexts, they can strengthen their capacity to act

independently, make decisions, and assume responsibility for the consequences of their choices.

Another relevant finding concerns communication between parents and children regarding non-formal activities. The fact that a significant proportion of parents report frequently discussing these experiences with their children indicates a considerable level of parental involvement. This openness to dialogue may play an important role in reinforcing the educational effects of non-formal activities, as it facilitates children's reflection on their experiences and contributes to integrating them into their personal development process.

Overall, the results support the hypothesis that non-formal education can significantly contribute to the development of children's socio-emotional skills. However, this contribution is neither uniform nor independent of other factors. The effects perceived by parents appear to be influenced by the frequency of participation, the quality and relevance of the activities, the nature of the educational intervention, and the family and social context in which the child develops. Therefore, mere participation in non-formal activities does not automatically guarantee consistent formative effects; it is necessary for these activities to be well structured, age-appropriate, and accompanied by processes of reflection and feedback.

Parents' perceptions regarding the role of teachers in supporting non-formal education also reveal a mixed situation. Although a significant proportion of respondents consider teachers' support to be valuable, a comparable percentage does not perceive sufficient teacher involvement in promoting or supporting non-formal activities. This finding suggests the need to strengthen the relationship between school, family, and non-formal educational environments, so that students can benefit from a coherent and integrated educational framework.

The results also indicate the possibility of an indirect contribution of non-formal education to the reduction of aggressive behaviors, even though this dimension was not perceived uniformly by respondents. Observations reported by a significant group of parents suggest that activities based on cooperation, empathy, self-regulation, and shared rules may create favorable contexts for reducing negative behavioral manifestations and strengthening emotional balance.

In conclusion, non-formal education emerges as a valuable component of children's holistic development, extending beyond the status of a simple recreational alternative to formal education. It provides authentic contexts for expression, reflection, cooperation, and experimentation that can support the development of competencies essential for personal and social life. Although it does not replace

formal education, non-formal education complements its functions and contributes to broadening children's formative horizons.

In this respect, it is necessary to strengthen collaboration between schools, families, and the actors involved in providing non-formal education. At the same time, educational policies should support the development of high-quality, accessible, and relevant non-formal programs, as well as the adequate training of the personnel involved in their implementation. Only through an integrated approach centered on the real needs of the child can an educational model be developed that equally values the cognitive, emotional, relational, and social dimensions of human development.

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ATTACHMENT STYLES AND PARENTAL RESPONSES TO PRESCHOOL CHILDREN'S NEGATIVE EMOTIONS

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Abstract: *Early socio-emotional development in children is significantly influenced by the quality of the attachment relationship and by the way parents manage children's negative emotions. The present study aims to analyze the relationship between parents' attachment styles and their ability to respond to the negative emotions of preschool-aged children. The research has a non-experimental, cross-sectional design and was conducted on a sample of 48 parents of children aged between 3 and 6 years, recruited from preschool educational institutions in the municipality of Lugoj. Data were collected through an online questionnaire using two psychometric instruments: the Adult Attachment Scale (AAS), used to assess attachment styles, and the Coping with Children's Negative Emotions Scale (CCNES), used to evaluate parental responses to children's negative emotions. The results of the Pearson correlation analyses indicate the existence of statistically significant relationships between attachment styles and parental responses. Secure attachment was negatively correlated with punitive reactions, suggesting a lower likelihood of using punishment-based strategies in managing children's emotions. In contrast, the anxious-ambivalent attachment style was positively associated with punitive reactions and with the minimization of negative emotions. In addition, parental distress reactions were strongly correlated with punitive and minimizing reactions, indicating that parents' emotional regulation difficulties may influence their response strategies to children's emotions. On the other hand, encouraging emotional expression was associated with parental responses focused on emotion and on problem-solving. The results highlight the importance of parental attachment style in the development of children's emotional regulation*

competencies and support the need for educational interventions and parental counseling programs aimed at promoting secure attachment.

Keywords: *parental attachment; parental capacity; emotional regulation; negative emotions; parenting; preschool children.*

Introduction

Attachment represents a fundamental concept for understanding children's socio-emotional development, having significant implications for psychological adjustment and later interpersonal relationships. Within the parent-child relationship, attachment constitutes the foundation of early emotional development, influencing not only children's capacity for emotional regulation but also their sense of security and their way of relating to others. Secure attachment, characterized by parental sensitivity, emotional availability, and empathy, provides children with a stable framework for exploration and socio-emotional development.

In the contemporary context, parents frequently face difficulties in managing children's emotions, especially those perceived as negative, which may influence the quality of the attachment relationship. The way parents respond to these emotional manifestations represents an important factor in the development of children's emotional regulation competencies.

Drawing on attachment theory, the present study aims to analyze the relationship between attachment styles and the ways in which parents respond to the negative emotions of preschool-aged children. Investigating adaptive and maladaptive parental responses at this developmental stage may provide relevant information regarding the factors that contribute to the formation of secure attachment and may support interventions aimed at strengthening parental emotional competencies.

Theoretical Background

Attachment theory represents one of the most influential explanatory frameworks of early relationships between parents and children, with major implications for later socio-emotional development. Its foundations were formulated by John Bowlby and empirically consolidated by Mary Ainsworth, who demonstrated that early bonds with primary caregivers structure the child's emotional security, emotion regulation processes, and the quality of later relationships (Bowlby, 1969; Bowlby, 1973; Ainsworth, Blehar & Wall, 1978). Attachment is defined as "the child's tendency to seek proximity to

certain individuals and to feel protected in their presence” (Atkinson et al., 2002, p.114), being understood not only as an affective relationship but also as a fundamental behavioral system for adaptation and self-regulation.

From Bowlby’s perspective (1969), attachment has adaptive value, as the child is biologically oriented toward maintaining proximity to the caregiver, especially in stressful situations. This perspective was also supported by Lorenz’s (1953) ethological studies, as well as by the research conducted by Harlow and Harlow (1969), which showed that the need for comfort and emotional security exceeds the mere satisfaction of physiological needs. In the same theoretical line, Bowlby (1973) emphasized that early attachment experiences contribute to the formation of internal working models of the self, others, and relationships, with long-term effects on emotional and social functioning. Subsequent studies have shown that the lack of early relational security may be associated with emotional regulation difficulties, anxiety, and maladaptive relational patterns (Sroufe, 2005; Hoffman et al., 2024).

Mary Ainsworth’s contribution was essential for the empirical validation of attachment theory. Through research conducted in Uganda and Baltimore, she demonstrated the role of parental sensitivity in the development of secure attachment and developed the experimental procedure known as the Strange Situation Procedure, which enabled the identification of secure, avoidant, and anxious–ambivalent attachment patterns (Ainsworth, 1989; Ainsworth et al., 1978). Later, Main and Solomon (1990) added the category of disorganized attachment. From this perspective, the quality of parental emotional availability and the consistency of parental responses to children’s needs constitute central elements in the development of emotional security.

In particular, secure attachment is associated with healthy socio-emotional development, active exploration, openness to relational closeness, and an increased capacity for emotional self-regulation (Bowlby, 1969; Ainsworth et al., 1978). Children with this type of attachment tend to display empathy, psychological resilience, and stronger social competencies (Cassidy, 1994; Sroufe, 2005; Grossmann et al., 2008). These characteristics can also be understood through the presence of positive behavioral markers such as trust, emotional openness, and adaptive responses to relational contexts (Marcu et al., 2024).

In contrast, avoidant attachment is characterized by the minimization of the need for closeness and by emotional suppression strategies, often associated with parental contexts that are emotionally distant or

rejecting (Cassidy & Berlin, 1994; Grossmann et al., 2008; Thompson, 2016). From a behavioral perspective, this pattern may be reflected in negative markers such as emotional withdrawal, avoidance of intimacy, or diminished responsiveness to social cues (Marcu et al., 2024).

Anxious–ambivalent attachment generally emerges in relational contexts marked by inconsistency, unpredictability, and difficulties in emotional availability, being associated with relational anxiety, emotional vulnerability, and affective regulation difficulties (Cassidy & Berlin, 1994; Bartholomew & Horowitz, 1991; Mikulincer & Shaver, 2007). Such patterns may also manifest through fluctuating behavioral indicators, including heightened sensitivity to rejection and instability in emotional responses (Marcu et al., 2024).

These attachment patterns must be understood in direct relation to parental capacity, namely the set of cognitive, emotional, and behavioral resources through which the parent responds appropriately to the child. In a broad sense, parenting is defined as “the process of supporting and promoting the physical, emotional, social, and intellectual development of a child from birth until adulthood” (Hendricks, n.d., apud Pânișoară, 2022, p. 27). However, the literature also emphasizes the reflective dimension of parenting, centered on parental responsibilities, actions, and internal positioning (Pânișoară, 2022, p. 28). At the same time, the family environment and the educational practices within it represent fundamental factors that shape the child’s psychological and cognitive development, as parental attitudes, emotional climate, and patterns of interaction significantly influence the child’s mental development and adaptation (Ignat, 2015). From this perspective, parental capacity can be understood as a set of abilities through which the parent recognizes, validates, contains, and appropriately manages the child’s emotions. Conceptually, ability refers to “a circumscribed set of competencies that are expressed in efficient behaviors and that generally result from learning, possibly supported by innate dispositions or aptitudes” (Doron & Parot, 2007, p. 15).

Current literature emphasizes that effective parenting does not only involve basic caregiving but also supporting children’s emotional and social development through sensitive responses to difficult situations and negative emotions (Brown, 2019; Kohn, 2006; Hoffman et al., 2024; Solter, 2013). Consistent with recent research, children’s behavioral and emotional development is also supported by participation in educational and non-formal contexts that stimulate interaction, cooperation, and parental involvement, with parents perceiving behavioral improvements when children are included in such activities (Dughi et al., 2024). At the same time, recent literature

highlights the importance of authentic and empathetic collaboration between significant adults in the child's life, showing that the teacher–parent relationship can support the development of resilience and healthy learning and adaptation strategies (Dughi & Coşarbă, 2025).

Recent research also highlights the role of parental practices and family relational dynamics in supporting children's development, emphasizing that parenting behaviors are influenced by individual psychological factors and the quality of the couple relationship, which in turn affect family functioning and child outcomes (Chiş et al., 2022). Furthermore, in the context of increasing digital exposure in early childhood, parents play a crucial role in guiding children's media use by establishing healthy habits and balanced digital practices that support cognitive, emotional, and social development (Ignat, 2025).

Applied to the emotional domain, parental capacity refers to the parent's ability to recognize, validate, understand, and respond appropriately to the child's emotions. This competence is influenced by the parent's developmental history, their own attachment style, and their representations regarding childrearing and education (Mikulincer & Shaver, 2007).

Research methodology

Research Objectives

The general objective of the study is to highlight the possible correlations between parents' attachment style and their capacity to manage the negative emotions of preschool-aged children.

The specific objectives established for this research are:

Objective 1: To identify correlations between attachment style and parental capacity to manage children's negative emotions.

Objective 2: To identify attachment types among the participants.

Objective 3: To evaluate parental capacity to manage children's negative emotions.

Research Hypotheses

Hypothesis 1: There is a statistically significant relationship between secure attachment style and punitive parental reactions.

Hypothesis 2: There is a statistically significant relationship between anxious–ambivalent attachment style and punitive reactions and minimization reactions.

Hypothesis 3: There is a statistically significant relationship between distress reactions and punitive reactions and minimization reactions.

Hypothesis 4: There is a statistically significant relationship between encouraging emotional expression and emotion-focused and problem-focused parental reactions.

Variables and Research Design

The present research employed a non-experimental, cross-sectional design, with the label variable being parents of preschool children.

In this study, the independent variable is the parents' attachment style (secure attachment, avoidant attachment, and anxious-ambivalent attachment), while the dependent variables are parental capacity to manage children's negative emotions, measured through six subscales (distress reactions, punitive reactions, expressive encouragement, emotion-focused reactions, problem-focused reactions, minimization reactions).

Participants

The research was conducted on a sample of 48 participants recruited from preschool educational institutions in the municipality of Lugoj. Participants were selected arbitrarily from among individuals who volunteered to participate in the study.

The inclusion criterion for participation was the status of being a parent of a preschool-aged child (3–6 years old), regardless of gender, education, or religion. These latter variables were collected but were not part of the eligibility criteria and were not used to generate research hypotheses.

In the present study, gender differences were not considered, therefore participants formed a mixed sample including both female and male respondents. No hypotheses were formulated regarding variables or possible correlations based on gender.

Procedure for Questionnaire Administration

The data for this study were collected through an online questionnaire administered on the Google Forms platform, which included sections of all the instruments used in this research. The questionnaire was distributed to participants through a link shared on WhatsApp groups of parents associated with preschool classes.

Participants were informed about the purpose of the research as well as the voluntary nature of their participation.

In accordance with ethical standards in research, participants were assured of the confidentiality of their responses and were informed that the data would be used exclusively for academic research purposes.

Informed consent was obtained through a dedicated consent form, which was made available to participants before completing the questionnaire. This form included detailed information about the purpose of the study, the data collection procedure, and participants' rights.

The questionnaires were completed anonymously, and all responses were stored in a database provided by Google Forms. Data collection took place over a three-week period (December 1–December 21, 2024), and completing the questionnaire was estimated to take approximately 20 minutes.

Presentation of the Research Instruments

In this study, two psychometric instruments were used to evaluate the variables of interest forming the framework of the research: attachment styles and parental responses. These instruments were: CCNES (Coping with Children's Negative Emotions Scale) and AAS (Adult Attachment Scale).

These psychometric tools were selected to provide a comprehensive evaluation of the factors influencing the management of children's negative emotions and to explore the relationships between attachment styles and parental responses.

a) Description of the CCNES Instrument (Coping with Children's Negative Emotions Scale):

The Coping with Children's Negative Emotions Scale (CCNES) is a psychological assessment instrument developed by Fabes, Eisenberg, and Karbon (1990) with the aim of measuring parental response styles to their children's negative emotions.

The reliability of this instrument was measured in the validation study conducted by the authors, obtaining a Cronbach's Alpha coefficient ranging between 0.71 and 0.87 across the six subscales (Fabes et al., 1990). In the present study, the items of the subscales yielded a Cronbach's Alpha coefficient of 0.93.

This instrument is based on the idea that parents' reactions to children's emotions can influence the development of children's emotional self-regulation abilities and can contribute to the formation of an emotionally secure framework essential for healthy development. The CCNES is relevant in assessing how parents approach emotions such as fear, anger, or sadness, parental behaviors being considered key factors in the development of emotional regulation during childhood (Fabes, Eisenberg & Karbon, 1990).

b) Description of the AAS Instrument (Adult Attachment Scale):

The Adult Attachment Scale (AAS) is a psychometric instrument developed by Collins and Read (1990) used to assess attachment styles in adults.

The Cronbach's Alpha coefficient obtained by the authors in their studies ranged between 0.80 and 0.85 (Collins & Read, 1990). In the present study, according to the statistical software output, the

Cronbach's Alpha coefficient was 0.33, indicating relatively low reliability and items that were not strongly correlated with each other. This questionnaire is based on attachment theory initially developed by Bowlby (1969/1982) and later extended by Mary Ainsworth (1978), whose work was further developed by other researchers. The AAS has been widely used in psychological studies examining how attachment styles influence interpersonal relationships, emotional regulation, and various social behaviors (Collins & Read, 1990).

Data Analysis

Hypothesis 1: There is a statistically significant relationship between secure attachment style and punitive parental reactions.

Tabel 1.

The results obtained through the Pearson correlation between secure attachment style and parents' punitive reactions to children's negative emotions.

N	SA	PR
SA	48	.296*
PR	48	-.296*

Note. N=48. * $p < .05$ ** $p < .01$. Significant correlations are indicated by asterisks (**).

SA – secure attachment

PR – punitive parental reactions

According to the Pearson correlation analysis conducted to examine the relationship between secure attachment style and parents' tendency to use punitive reactions when managing children's negative emotions, an inverse relationship between the variables can be observed. The relationship is statistically significant and negative, with $r = -.296$ and a significance level of $p = .041$.

Thus, parents who display a predominantly secure attachment style tend to exhibit fewer punitive reactions when their children express negative emotions.

Hypothesis 2: There is a statistically significant relationship between anxious-ambivalent attachment style and punitive reactions and minimization reactions.

Tabel 1.

The results obtained through the Pearson correlation between anxious–ambivalent attachment style and parents’ punitive and minimizing reactions to children’s negative emotions.

	N	AAA	PR	MR
AAA	48		.337*	.321*
PR	48	.337*		.861**
MR	48	.321*	.861**	

Note. N=48. * $p < .05$ ** $p < .01$. Significant correlations are indicated by asterisks (**).

AAA – anxious – ambivalent attachment

PR – punitive parental reactions

MR – minimization parental reactions

Regarding the correlation between anxious–ambivalent attachment style and punitive and minimizing parental reactions, the hypothesis can be considered statistically supported.

According to the Pearson correlation analysis conducted for this hypothesis, there is a statistically significant positive relationship between anxious–ambivalent attachment style and punitive reactions ($r = .337$, $p = .019$), as well as between anxious–ambivalent attachment style and minimizing reactions ($r = .321$, $p = .026$). These results indicate a direct relationship between the variables.

Based on these findings, it can be stated that parents with a predominantly anxious–ambivalent attachment style tend to use punitive reactions when managing children’s negative emotions. The more children display negative emotional responses to their experiences, the more likely parents with an anxious–ambivalent attachment style are to resort to punitive behaviors in managing those emotions. At the same time, parents with this attachment style also tend to employ minimization reactions, alongside punitive responses, when dealing with their children’s negative emotions.

Hypothesis 3: There is a statistically significant relationship between distress reactions and punitive reactions and minimization reactions.

Tabel 1.

The results obtained through the Pearson correlation between distress reactions and punitive and minimizing reactions.

	N	DR	PR	MR
DR	48		.831**	.719**
PR	48	.831**		.861**
MR	48	.719**	.861**	

Note. N=48. * $p < .05$ ** $p < .01$. Significant correlations are indicated by asterisks (**).

DR – parental distress reactions

PR – punitive parental reactions

MR – parental minimalization reactions

According to the data obtained in this study, there are statistically significant correlations between several types of parental responses to children's negative emotions.

Specifically, there is a strong statistically significant relationship between distress reactions and punitive reactions ($r = .831$, $p < .001$) and a strong statistically significant relationship between distress reactions and minimizing reactions ($r = .719$, $p < .001$). Additionally, there is a strong statistically significant relationship between punitive reactions and minimizing reactions ($r = .861$, $p < .001$).

The results of the correlation analysis indicate that all three types of parental responses—distress reactions, punitive reactions, and minimizing reactions—are strongly positively correlated with one another. In other words, parents who tend to experience emotional discomfort in response to their children's negative emotions are also more likely to respond through punishment or by minimizing those emotions.

The high correlation coefficients (with r values ranging between .719 and .861) suggest that these parental responses do not appear to occur in isolation but may reflect a general maladaptive pattern of managing children's emotions, characterized by difficulties in providing emotional support.

Hypothesis 4: There is a statistically significant relationship between encouraging emotional expression and emotion-focused and problem-focused parental reactions.

Tabel 1.

The results obtained through the Pearson correlation between the encouragement of negative emotional expression and emotion-focused and problem-focused reactions.

	N	EER	EFR	PFR
EER	48		.671**	.738**
EFR	48	.671**		.908**
PFR	48	.738**	.908**	

Note. N=48. * $p < .05$ ** $p < .01$. Significant correlations are indicated by asterisks (**).

EER – expressive encouragement reactions

EFR – emotion-focused parental reactions

PFR – problem-focused parental reactions

Following the application of the Pearson correlation analysis, the statistical data support the validation of the hypothesis that there is a statistical correlation between the encouragement of negative emotional expression and emotion-focused and problem-focused parental reactions.

As shown in Table 1, there is a strong positive statistically significant relationship between the encouragement of negative emotional expression and emotion-focused reactions ($r = .671$, $p < .001$), as well as a strong positive statistically significant relationship between the encouragement of negative emotional expression and problem-focused reactions ($r = .738$, $p < .001$). In addition, there is a strong, directly proportional relationship between emotion-focused reactions and problem-focused reactions, with a correlation coefficient of $r = .908$ and a significance level of $p < .001$.

Based on these findings, and given the high correlation values ranging between .671 and .908, it can be concluded that parents' encouragement of children's expression of negative emotions is associated with the use of both emotion-focused and problem-focused parental responses. Thus, parents who support and validate their children's expression of negative emotions tend to adopt adaptive response strategies, oriented toward emotional regulation and the resolution of problematic situations.

Furthermore, the very strong correlation between emotion-focused and problem-focused reactions suggests that these two types of parental responses may coexist within a supportive parenting style that is sensitive to children's emotional needs.

Discussion

The present study aimed to explore the relationship between parents' attachment styles and their capacity to manage the negative emotions of preschool-aged children. In the current socio-educational context, where increasing attention is given to the role of emotional education in children's harmonious development, emotional regulation plays a crucial role in early childhood education. Furthermore, the literature emphasizes the parent-child relationship, which includes the factors that may influence parental responses and their tendency to manage children's negative emotional reactions either through supportive strategies or through less supportive approaches.

Building on attachment theories formulated by Bowlby (1969/1982) and later expanded by subsequent researchers such as Mary Ainsworth (1978), we hypothesized that attachment style may significantly influence the ways in which parents tend to respond to children's negative emotions. In this regard, the present research had three main specific objectives: (1) identifying the attachment styles of the participants, (2) highlighting the correlations between attachment style and parental capacity to manage negative emotions, and (3) evaluating and identifying the relationships between possible parental response tendencies to children's negative emotions.

The statistical analysis of the collected data confirmed all the hypotheses formulated in this study, highlighting significant correlations between the variables examined.

Hypothesis 1 was validated, with the results indicating a significant inverse correlation between secure attachment style and punitive parental reactions. This finding suggests that parents with a secure attachment style are less likely to respond with punitive reactions, preferring instead to adopt strategies that support and understand children's emotional experiences. These findings are consistent with the literature cited in this paper, which emphasizes that secure attachment is associated with emotional regulation within the parent-child relationship, along with higher levels of parental empathy.

Hypothesis 2 was also confirmed, revealing a positive relationship between anxious-ambivalent attachment style and parental reactions of punishment and minimization. Thus, parents with an insecure attachment style, predominantly characterized by the avoidance of emotionally uncomfortable situations, tend to respond to children's negative emotions through maladaptive strategies, either by applying punishment or by minimizing the importance of children's emotional experiences. These conclusions are supported by the theoretical framework of this study, according to which parents' own emotional regulation difficulties may negatively affect their responses to

children's emotions and may have long-term negative consequences for their capacity to support their children's emotional development.

Hypothesis 3 highlighted the existence of strongly significant correlations between parents' distress reactions and punitive and minimizing reactions. These statistical results indicate that parents who experience higher levels of distress when confronted with children's negative emotions are more likely to respond to those emotions through punitive responses or by denying or minimizing the emotions experienced by the children. This pattern likely functions as a defense mechanism aimed at reducing the parents' own emotional discomfort, as also suggested by the literature cited in this study.

Hypothesis 4 confirmed the existence of strong statistically significant correlations between the encouragement of children's expression of negative emotions and emotion-focused and problem-focused parental reactions. Therefore, parents who validate and support the expression of children's negative emotions are also more likely to use adaptive parenting strategies in managing emotions, such as recognizing emotions and identifying concrete solutions for situations that have generated emotional discomfort for children. As shown in the studies presented in this paper, this hypothesis has a strong theoretical foundation, as parental sensitivity and emotional support contribute to the healthy development of children's emotional regulation and emotional intelligence.

One of the limitations of the present study concerns the data collection method. Online data collection allows access to a wider range of participants; however, some participants may encounter difficulties in accessing or completing the questionnaires due to factors such as limited internet access or lower digital skills. In addition, this method of administering the tests presents another limitation, namely the impossibility of directly observing each participant. Such observation could be conducted in a real setting through interviews and by directly observing participants while completing the questionnaires. Both types of direct observation could provide relevant information for this study.

Label variables may also be considered a limitation of the present study. For this research, potential confounding variables that could influence the results include participants' level of education, self-declared cultural background, parents' general stress level, children's temperament, children's gender, number of children in the family, quality of the couple's relationship, and parents' socio-economic context. The cross-sectional design of the research may also be considered a limitation, as the results were obtained at a single point in time, allowing only correlations to be identified rather than causal relationships.

The present research has multiple possibilities for continuation, as the topic of attachment, emotional intelligence, and children's socio-emotional development is very broad and offers numerous possibilities for practical parental interventions.

One possible direction for future research would involve increasing the number of participants beyond 48 in order to ensure greater generalizability of the results. This could make it possible to identify more subtle statistical differences in the correlations between attachment and emotional intelligence or between attachment and parents' response tendencies to children's negative emotions.

Furthermore, the use of qualitative methods, such as semi-structured interviews with participating parents, could be considered. These methods could provide additional information regarding the underlying reasons for parental responses to children's negative emotions, as well as insights into parents' developmental histories and their own relationships with their parents.

A further extension of the study could include additional variables such as level of education, parental stress levels, children's temperament, children's gender, number of children in the family, quality of the couple's relationship, and socio-economic context. Including these variables could generate new correlations and provide more comprehensive scientific conclusions regarding the factors that influence parental emotional reactivity.

Conclusions

The results of the study highlight the existence of significant relationships between parents' attachment styles and the ways in which they respond to the negative emotions of preschool-aged children. The data analysis indicates that parents with a secure attachment style exhibit fewer punitive reactions and are more likely to use adaptive strategies when managing children's emotions. This finding supports theoretical perspectives in the literature emphasizing that attachment security promotes parental empathy, emotional availability, and the use of responses that are sensitive to children's emotional needs.

In contrast, insecure attachment styles, particularly the anxious-ambivalent type, are associated with a more frequent use of punitive reactions and the minimization of children's negative emotions. Furthermore, the strong correlations between parental distress, punishment, and minimization reactions suggest that parents' difficulties in emotional regulation may influence the way they manage children's emotional experiences. At the same time, the results indicate that encouraging emotional expression is associated with adaptive parenting strategies, such as emotion-focused and problem-focused

responses, which contribute to the development of children's emotional self-regulation competencies.

Overall, the findings of the study emphasize the importance of developing parental emotional regulation competencies and promoting a secure attachment style within the parent-child relationship. These findings have relevant implications for the development of parental education programs, psychological counseling, and educational interventions aimed at supporting children's socio-emotional development. Strengthening parental sensitivity and adaptive response strategies may contribute to creating a secure family environment that supports healthy emotional development in children.

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AUTONOMOUS LEARNING IN CONTEMPORARY EDUCATION

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Abstract: *Autonomous learning emerges, within the framework of contemporary education, as an essential dimension in the development of 21st-century competencies, enabling the learner to become an active agent in their own cognitive and personal growth. It entails taking responsibility for educational decisions through the planning, monitoring, and regulation of the learning process in accordance with individual goals and available resources. Learning autonomy manifests itself both at the cognitive and metacognitive levels-through the capacity for self-reflection and critical self-assessment-and at the affective and motivational levels-through the cultivation of intrinsic motivation and self-esteem. The teacher’s role is redefined from that of a transmitter of knowledge to that of a facilitator of the formative process, supporting the learner’s transition from dependency to cognitive and decisional independence. At the same time, the integration of digital technologies broadens the opportunities for autonomous learning by providing contexts for content personalization and self-regulation of progress. Consequently, autonomy becomes a transversal competence, indispensable for lifelong learning, adaptation to social and professional change, and active participation in the community. From this perspective, autonomous learning is not merely a didactic strategy but a form of intellectual and civic emancipation that underpins the individual’s holistic development.*

Keywords: *learning; autonomous learning; contemporary education.*

Introduction and relevant literature review

Learning can be conceptualized as a complex process of acquiring and transforming experience, through which the individual gains new knowledge, skills, competencies, and forms of behavior, or restructures and adapts existing cognitive and behavioral frameworks. The fundamental purpose of this process is to optimize adaptation to

environmental demands and to the continuous dynamics of social and professional life. From this perspective, learning is not limited to the mere accumulation of information but involves personal development, cognitive flexibility, and the capacity for self-regulation in the face of change (Bocoş, 2017).

Learning is a continuous process that unfolds throughout life and manifests in a variety of forms and contexts, with the ultimate aim of enabling the individual to adapt effectively to their environment. From an individual perspective, learning contributes to the development of the capacity to anticipate and interpret reality, to the strengthening of personal autonomy, and to the achievement of intrinsic goals such as personal fulfillment, increased self-esteem, and the formation of a sense of self-efficacy and self-actualization (Petrache & Mara, 2023).

The educational process becomes significantly more effective when it is centered on the learner and their learning activity, as such an approach transforms the teacher's role from a mere provider of information into a facilitator of the educational process. The teacher is no longer the sole source of knowledge but becomes a guide for autonomous learning, with the mission of organizing, stimulating, and guiding the learning activity. In this context, educational institutions tend to promote learner-centered practices focused on developing student autonomy, moving away from a strictly evaluative perspective and orienting instead toward the formation of metacognitive and self-assessment competencies. Under the teacher's guidance, students come to take responsibility for their own learning paths, develop critical reflection skills, and demonstrate active and conscious engagement in the formative process (Albulescu, 2024).

Autonomy, understood as a fundamental social competence, refers to the individual's ability to act independently and responsibly within interpersonal relationships, while maintaining a balance between personal freedom and respect for others. This ability is not innate but develops gradually through formal and informal learning experiences, depending on each individual's developmental characteristics. From an educational perspective, autonomy denotes both the freedom to make decisions regarding one's own learning path and the capacity for self-regulation and critical reflection upon it. Within the teacher student relationship, autonomy manifests as a formative partnership in which the educator facilitates the transition from cognitive and motivational dependence to independence, thereby fostering the development of genuine responsibility for learning (Albulescu, 2025).

Student autonomy involves a set of cognitive, affective, and volitional processes through which the learner becomes capable of managing

their own learning trajectory. Thus, the manifestation of autonomy implies:

- Awareness of the necessity and function of autonomy, through a realistic assessment of one's own resources, limitations, and the level of task difficulty, achieved via critical self-analysis.
- Evaluation of the optimal degree of autonomy, depending on the context, type of activity, and individual capacities.
- Anticipation of the consequences of one's actions, in terms of both opportunities and possible constraints.
- Alternation between autonomy and cooperation, by integrating individual activities in a balanced manner with collaboration involving the teacher and peers.
- Management of autonomous learning sequences, in relation to the dynamics and objectives of instructional activities.
- Transfer and utilization of experiences gained through autonomous learning in diverse educational contexts.
- Reflection on the effects of autonomy development on other dimensions of personality-motivational, affective, attitudinal, and volitional-as well as on self-control, metacognition, and the self-regulation of cognitive behavior (Joița, 2006).

Autonomous learning represents an educational process through which students assume an active and conscious role in managing their own development, exercising control over decisions related to learning objectives, content, and strategies. It involves the development of the capacity for self-regulation of the educational process through the planning, monitoring, and continuous adjustment of one's own actions, as well as the ability to realistically self-assess progress in relation to personal developmental needs and interests. From an academic perspective, autonomous learning is associated with metacognitive competencies and the cultivation of a reflective attitude toward the process of knowledge construction, contributing to the strengthening of responsibility and intrinsic motivation for lifelong learning (Albulescu, 2025).

From a general perspective, learning autonomy can be defined as the individual's ability to consciously and responsibly manage their own learning process, including the planning, monitoring, and regulation of strategies and objectives according to their personal needs and resources (Nunan, 1997).

Autonomous learning represents a complex process that requires from the learner full engagement and the mobilization of all available

resources including cognitive and metacognitive, as well as affective and motivational ones for the effective management of their own learning activity (Neacșu, 2006).

To clarify the meaning of autonomous activity in the educational context, Winne defines autonomous learning as a complex process in which the individual involved assumes a central and active role in managing their own learning. This form of learning entails the exercise of significant influence over the essential decisions that structure the educational process, including the choice to initiate learning, the selection of content, the determination of the timing and duration of learning, the adoption of appropriate strategies and methods, as well as the definition of the intended goals and outcomes (Winne, 2005).

The process of autonomous learning is essentially determined by the psychological relationship that the student establishes with their own educational endeavor, a relationship that mediates how the learner engages both with learning content and with the organization and dynamics of study activities. This relationship entails the ability to adopt a reflexive distance from the learning experience, to critically analyze the effectiveness of the strategies employed, and to evaluate the progress achieved in relation to the assumed objectives (Little, 1991).

At the same time, autonomous learning involves the formulation of conscious and deliberate decisions regarding the selection of resources, time management, and the adaptation of learning strategies to contextual and personal demands. Independent action is therefore neither spontaneous nor unstructured, but rather the outcome of an internal process of cognitive and motivational self-regulation, oriented toward the attainment of clearly defined educational goals (Little, 1991).

From this perspective, autonomy in learning presupposes not only individual initiative, but also the development of a personal perspective on learning, grounded in the active assumption of responsibility for one's own decisions and outcomes. The student thus becomes an active agent of their own education, capable of consciously and reflexively managing their educational trajectory in accordance with their academic and professional needs, interests, and objectives (Rad, D., & Roman, A., Little, 1991).

The autonomy in learning involves the following actions for the learner: the process of searching for information, exercising the skills for learning, the awareness of the stage the student has reached in learning and last but not least choosing the appropriate strategies (Felea, 2022).

This perspective is supported by Self-Determination Theory (Deci & Ryan, 2000), which places autonomy at the core of intrinsic motivation. According to this paradigm, genuinely autonomous learning arises from the fulfillment of three fundamental psychological needs: autonomy, competence, and relatedness. Thus, the act of learning becomes a process of self-actualization, through which the individual not only acquires knowledge but also develops self-awareness, a sense of self-efficacy, and confidence in their own cognitive and emotional resources (Deci & Ryan, 2000, Roman, A.F., 2024; Balaş & Torkos, 2025).

Learning may be organized either as an externally directed process or as a self-directed one, which is characteristic of autonomous learning. Autonomy in learning does not represent a static competence; rather, it is progressively developed throughout the lifespan and constitutes one of the essential dimensions of lifelong education. In this respect, autonomous learning involves a transfer of responsibility for the educational process from external agents to the learner (Voiculescu, 2010).

Under conditions of autonomous learning, individuals consciously assume responsibility for setting learning objectives, planning and organizing activities, selecting appropriate strategies and resources, as well as monitoring and evaluating their own progress. Moreover, maintaining an optimal level of motivation becomes a personal responsibility, closely related to self-regulatory capacity and commitment to the established goals. Thus, autonomy in learning reflects the individual's ability to manage their own educational trajectory in a reflexive and responsible manner, in accordance with contextual demands and their personal and professional development needs (Voiculescu, 2010).

A student can be considered autonomous when:

- They initiate learning voluntarily, individually, and independently, approaching study in a personalized manner that allows them to exercise critical, reflective, and divergent thinking. This involves not only engaging with the materials but also developing the ability to formulate questions, analyze information, and generate their own solutions.
- They are aware that they are learning autodidactically and assume responsibility for their own educational process, understanding that success or failure largely depends on their personal commitment and decisions, rather than solely on the teacher's intervention or external factors.
- They reflect on the learning requirements and strategically plan their actions, anticipating the steps needed to achieve objectives

and selecting the most appropriate cognitive methods and resources for each learning situation. This entails careful analysis of how they learn and the outcomes they can achieve.

- They independently organize and structure their activities, progressing through conscious interaction with learning content, teachers, and peers. In this way, the student does not passively receive information but actively participates in constructing knowledge and applying what they learn in practice.
- They continuously self-manage and self-monitor learning situations, applying metacognitive strategies that allow them to assess progress, adjust approaches, and develop their skills further. This includes being aware of personal strengths and limitations across different educational contexts: formal, non-formal, or informal.
- They set clear learning goals and objectives and integrate them into a coherent plan, understanding how to coordinate methods, procedures, techniques, tools, and curricular resources. The student thereby develops a systemic perspective on the learning process, anticipating and evaluating the effects of different strategies on their progress.
- They engage their full intellectual, volitional, emotional, and physical potential, demonstrating active, critical, and creative behavior. An autonomous student does not merely accumulate knowledge but engages emotionally and cognitively in the process, seeking to construct meaning and develop deep understanding.
- They initiate and implement their own learning endeavors, acting individually or collaboratively. Seeking teacher support or consulting peers becomes a strategic tool rather than a dependency, and additional research reflects commitment to deepening knowledge.
- They transfer acquired knowledge and skills to new contexts, demonstrating the ability to generalize and adapt learning to different situations, which is essential for practical application and ongoing professional development.
- They display an active, positive, and lifelong learning-oriented attitude, adopting a proactive approach to personal and professional development, which enables them to integrate continuous learning as an intrinsic part of their experience (Bocoş, 2013).

Future Perspectives and Research Directions

Therefore, reflection on learning autonomy highlights the complexity of this concept, which transcends the strictly pedagogical dimension and extends into the psychological, social, and technological spheres. In the context of contemporary education, autonomy can no longer be regarded as an end in itself, but rather as a dynamic process, constantly interacting with new paradigms of learning and personal identity formation.

This conceptual openness creates the premises for new directions of analysis and research, aimed at deepening the connections between individual autonomy, intrinsic motivation, educational innovation, and current technological developments. From this perspective, a forward-looking reflection becomes necessary on how autonomy can be cultivated, strengthened, and leveraged within emerging educational ecosystems.

In a society undergoing continuous transformation, learning autonomy remains an open construct, subject to reinterpretation and theoretical redefinition. Future educational research has the mission of exploring autonomy not merely as an individual ability, but as a complex phenomenon situated at the intersection of the psychological, pedagogical, technological, and ethical dimensions of human development.

A first relevant direction concerns the analysis of the relationship between student autonomy and intrinsic motivation in hybrid learning environments. In an educational context where face-to-face interaction intertwines with digital experiences, it becomes essential to understand how personal motivation, self-regulation, and digital competence can be integrated into a coherent framework of autonomous learning.

Another promising field of research concerns the impact of artificial intelligence on self-regulation processes and the development of critical thinking. Intelligent educational platforms can support autonomy, yet they may also generate risks of cognitive dependency or reduced discernment. Examining these aspects is essential for shaping a responsible pedagogy of digital autonomy.

Another priority direction involves the development of curricular strategies for cultivating autonomy in Romanian schools, through the design of learning contexts that encourage decision-making, reflection, and self-assessment. Integrating autonomy as a transversal objective within the curriculum could strengthen the transition from a control-centered education to one oriented toward responsibility and personal initiative.

Last but not least, it is necessary to deepen the professional dimension of autonomy by analyzing how the initial and ongoing training of

teachers contributes to the development of self-regulation, reflection, and autonomous pedagogical decision-making competencies. The autonomous teacher thus becomes a formative model, capable of fostering students' autonomy in turn.

Overall, learning autonomy emerges as a central value of contemporary education, as well as a dynamic process engaged in a continuous dialogue between tradition and innovation. Its future exploration requires an interdisciplinary approach at the crossroads of psychology, pedagogy, technology, and educational ethics aimed at shaping a reflective, responsible individual capable of lifelong learning.

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EEG-BASED INSIGHTS INTO INTERNAL LEARNING STATES: A STATE-OF-THE-ART REVIEW TOWARD A NEURO-PEDAGOGICAL FRAMEWORK

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Abstract: *The growing convergence of educational neuroscience, neurotechnology, and pedagogy has strengthened interest in neuropedagogy as a framework for understanding the internal conditions that shape learning. Within this context, electroencephalography (EEG) has emerged as a relevant method for investigating cognitive and emotional processes due to its high temporal resolution and applicability in dynamic educational settings. This review examines the role of EEG in the study of internal learning states, with particular attention to attention regulation, stress, affective processes, self-regulation, and internally oriented attention. The paper outlines the conceptual foundations of neuropedagogy, reviews EEG as a methodological tool for educational research, and synthesizes current evidence on cognitive-emotional asymmetries, stress and anxiety markers, depression-related neural patterns, conscientiousness-related oscillatory variation, and candidate spectral indicators of internal attentional states. The review highlights both the growing interpretive potential of EEG and the continuing challenges related to construct validity, psychometric rigor, ecological relevance, and ethical use. On this basis, the paper proposes a future-oriented neuro-pedagogical framework in which EEG data are treated as context-sensitive indicators that can enrich educational research when integrated with validated psychological constructs and multimethod designs.*

Keywords: *neuropedagogy; electroencephalography; internal learning states; educational neuroscience; neuro-pedagogical framework.*

Foundations of neuropedagogy and internal learning states

Positioned within a broader educational research landscape that has recently engaged with non-formal learning, dramatic pedagogy, digital classroom practices, teacher–parent communication, reading motivation, emotional development in early education, mentoring in lifelong learning, and psychosocial determinants of wellbeing and adaptation, the present review advances this line of inquiry by examining how EEG-based evidence may contribute to a neuro-pedagogical understanding of internal learning states (Dughi, 2020; Dughi & Bold, 2022; Dughi et al., 2024; Dughi et al., 2024; Dughi et al., 2024; Dughi & Coşarbă, 2025; Dughi et al., 2025; Dughi et al., 2025).

Neuropedagogy has emerged as an interdisciplinary field situated at the intersection of educational sciences, cognitive neuroscience, developmental psychology, and learning theory, with the explicit aim of refining educational understanding through empirically grounded insights into brain–behavior–learning relationships. Rather than reducing pedagogy to neurobiological determinism, contemporary neuropedagogy seeks to articulate a multi-level explanatory model in which neural dynamics, cognitive processing, affective modulation, and contextualized instructional practices are treated as mutually constitutive dimensions of the learning process. In this sense, educational neuroscience has gradually moved from a predominantly translational ambition—bringing laboratory findings into the classroom—toward a more dialogical framework in which pedagogical questions themselves shape neuroscientific inquiry (Gola, 2024; Williamson et al., 2025; Friedman et al., 2026). This repositioning is essential because the educational relevance of brain-based evidence does not lie in isolated neural correlates, but in its capacity to inform theoretically coherent and pedagogically meaningful interpretations of learning processes as they unfold in real environments (Elouafi et al., 2021; Piddubna et al., 2023).

Within this broader epistemic shift, neuropedagogy increasingly relies on the premise that learning is not merely the outcome of external instruction or observable performance, but is continuously mediated by internal learning states. These states include dynamic constellations of attention, arousal, emotional valence, cognitive control, motivational orientation, and self-regulatory readiness that shape how learners perceive, process, retain, and apply information. A cognitive

neuroscience perspective on learning emphasizes that instructional efficacy cannot be fully understood without considering these internal mediating processes, because the same pedagogical stimulus may be differentially encoded depending on the learner's psychophysiological condition at a given moment (Lotfi et al., 2023). Accordingly, the neuropedagogical project is not limited to identifying "where" learning happens in the brain, but extends to understanding "under what internal conditions" learning becomes more or less probable, stable, adaptive, or transferable (Gola, 2024; Friedman et al., 2026).

The conceptualization of internal learning states draws support from several complementary traditions. From a neuropsychological perspective, the Vygotskian-Lurian approach foregrounds the systemic organization of higher mental functions and the developmental interdependence of cognition, regulation, and mediated action. In this framework, attention, executive control, and learning difficulties are not treated as isolated traits, but as functionally organized outcomes of dynamic neural and sociocultural processes (Akhutina & Pylaeva, 2012). From an embodied and phenomenological standpoint, the mind cannot be separated from the lived body and its environmental embedding; thus, internal states are not merely intracranial events but organism-environment configurations that modulate perception, intentionality, and action (Fuchs, 2017). These perspectives converge in supporting a non-reductionist neuropedagogy: one that acknowledges the relevance of neural processes while resisting simplistic one-to-one mappings between brain signals and educational constructs.

This theoretical caution is particularly important in a field increasingly shaped by rapid technological expansion. The educational deployment of neuroimaging and neurotechnology has encouraged renewed interest in the possibility of accessing covert dimensions of learning that are not fully captured by behavioral assessments or self-report measures. Fernández (2022) argues that neuropedagogy has been significantly strengthened by the integration of neuroimaging methods, which provide a more differentiated view of the temporal and functional architecture of learning-related processes. At the same time, Williamson et al. (2025) note that the contemporary discourse on "learning brains" is inseparable from the rise of neurotechnology and datafication in education, which raises both conceptual and sociotechnical questions regarding how neural information is framed, interpreted, and operationalized within educational systems. Therefore, the development of neuropedagogy requires dual vigilance: methodological openness toward neuroscientific tools and conceptual restraint regarding their pedagogical translation.

Among the internal states most relevant for educational inquiry, attention occupies a central position because it regulates the selection, maintenance, and prioritization of information in relation to task demands. However, attention does not function independently of emotional and motivational conditions. Emotional regulation influences cognitive flexibility, working memory efficiency, and resistance to distraction, while stress-related activation can either mobilize or disrupt learning depending on its intensity, duration, and contextual meaning (Lotfi et al., 2023). In parallel, self-regulation involves the orchestration of attentional control, inhibitory processes, goal maintenance, and reflective monitoring, thereby functioning as a higher-order mediator between neural readiness and pedagogical engagement. Neuropedagogical models that aim to account for internal learning states must therefore integrate these dimensions into a coherent architecture rather than address them in isolation (Elouafi et al., 2021; Vasilieva et al., 2023).

The educational value of such integration has already been illustrated across diverse applied contexts. Piddubna et al. (2023) show that neuropedagogical innovation in schools becomes meaningful when theoretical principles are translated into structured pedagogical practices capable of responding to learners' neurocognitive variability. Similarly, Vasilieva et al. (2023) report that neuropedagogic approaches are associated with the development of primary school students' skills, suggesting that educational design informed by cognitive and affective functioning may contribute to more responsive and differentiated instruction. Beyond mainstream schooling, neuropedagogical reasoning has also been extended to specialized domains such as translation education, where the perception and processing of linguistic-cultural markers are examined through neurocognitively informed pedagogical guidelines (Povoroznyuk et al., 2024). Such applications indicate that neuropedagogy is not restricted to remedial or clinical settings; rather, it is increasingly conceptualized as a general framework for optimizing learning environments across disciplines and learner profiles.

A further expansion of the field can be observed in digitally mediated and high-performance contexts. Nefedchenko et al. (2023) discuss how information and communication technologies can be integrated into educational processes through insights derived from neuroscience, thereby reinforcing the view that learning technologies should be aligned with neurocognitive principles rather than merely adopted for their instrumental novelty. In a different but conceptually related direction, Isidori (2025) advances an AI-enhanced psychopedagogical approach for esports athletes, linking education, well-being,

competitive adaptation, and neurocognitive support. Although these applications differ substantially in domain and purpose, they share a common assumption: effective pedagogical intervention requires sensitivity to the learner's evolving internal state, especially in environments characterized by high informational density, rapid feedback loops, and fluctuating attentional demands.

This line of reasoning also explains the growing interest in neurofeedback and related forms of real-time psychophysiological modulation. The effectiveness of neurofeedback therapy in improving attention, behavior, and emotion regulation among children with autism spectrum disorder, as reported by Istiarsyah et al. (2026), suggests that internal states are not only measurable but, under certain conditions, can be systematically trained or scaffolded. For neuropedagogy, this finding is especially consequential because it shifts the educational focus from static diagnosis to dynamic regulation. If internal states can be monitored and progressively stabilized, then teaching may be reconceptualized not solely as content transmission, but as the intentional shaping of neurocognitive conditions that support learning readiness and adaptive engagement.

In this context, electroencephalography has acquired particular relevance due to its temporal sensitivity and relative accessibility in comparison with other neuroimaging techniques. Although later sections will examine EEG more specifically, its importance must already be acknowledged at the foundational level because it offers a means of approaching internal states as temporally dynamic and fluctuating rather than fixed or inferentially opaque. Earlier work on single-channel EEG signals demonstrated the feasibility of identifying basic mental-state distinctions such as eyes-open versus eyes-closed conditions, thereby illustrating the sensitivity of EEG to state-dependent neural variation (Öner & Hu, 2013). Subsequent reviews of EEG research in early childhood education further established that electrophysiological approaches can contribute to educational inquiry by clarifying developmental patterns of attention and cognitive engagement that are otherwise difficult to capture through conventional assessment alone (Mák et al., 2018).

More recent studies have broadened the scope of EEG-informed inference by investigating cognitive-emotional asymmetries, stress signatures, depressive patterns, conscientiousness-related wave profiles, anxiety assessment, and internally oriented attention. Adochiei et al. (2023) examined individual asymmetries in the power spectral density of EEG waves as markers of cognitive-emotional characteristics, indicating that neural oscillatory organization may reflect meaningful individual differences. Paraschiv et al. (2024)

explored EEG patterns associated with depression, while Adochiei et al. (2024) investigated stress indicators, Bănică et al. (2024) analyzed correlations between EEG wave patterns and conscientiousness, and Paraschiv et al. (2024) validated an anxiety assessment method using the g.TEC Unicorn Hybrid Black alongside psychological testing. Together, these studies do not simply expand the inventory of measurable states; they also reinforce the neuropedagogical argument that learning-relevant functioning is inseparable from affective and dispositional modulation. Complementing these contributions, Manea et al. (2026) proposed a candidate EEG spectral index of internally oriented attention through an exploratory comparison of prayer and relaxation, thereby opening an important line of inquiry into forms of attentional inwardness that may be educationally relevant for reflection, self-regulation, and contemplative learning contexts.

At the same time, the measurement of internal states must be approached with strong psychometric and epistemological discipline. Neural signals are not self-interpreting, and their pedagogical meaning depends on the adequacy of theoretical framing, construct specification, and inferential restraint. Rad et al. (2025) critically examine the illusion of measurement in affective science, arguing that the apparent precision of technologically mediated indicators may conceal unresolved conceptual ambiguities. This caution is directly relevant to neuropedagogy, where there is a persistent temptation to equate measurable neural activity with educationally meaningful constructs without sufficient validation. In a related vein, Paraschiv and Zamfirescu (2025) emphasize the importance of modern psychometric principles for ensuring that the transition from signal detection to construct interpretation remains methodologically defensible. Even broader theoretical work on information, entropy, and communication reminds us that any attempt to interpret neural patterns presupposes a model of signal organization and meaning assignment, rather than a transparent reading of mental reality itself (Paraschiv, 2016).

These concerns extend beyond methodology into the ethical and sociopolitical domain. As neuroscience becomes increasingly entangled with institutional decision-making, issues of privacy, surveillance, data ownership, and normative classification become central rather than peripheral. Grant (2021) shows that the age of neuroscience compels a rethinking of law, state, and market relations precisely because neural data occupy a sensitive position between personhood, autonomy, and governance. In educational settings, this implies that neuropedagogical enthusiasm must be accompanied by careful reflection on the legitimacy, proportionality, and purpose of

any attempt to monitor learners' internal states. The pedagogical utility of neuroscientific information cannot be disentangled from questions concerning consent, interpretive authority, and the risk of converting learners into objects of intensified cognitive surveillance (Grant, 2021; Williamson et al., 2025).

From a broader educational policy perspective, the relevance of internal learning states also intersects with current concerns about inclusion, assessment quality, and differentiated support. Colareza et al. (2026) argue that cognitive education and innovative assessment in primary school must be aligned with learning progressions and systemic challenges such as those highlighted by Romania's OECD–PISA context. This argument is highly compatible with neuropedagogy, which offers a framework for understanding why standardized instructional approaches may fail to address learner variability at the level of attentional stability, emotional readiness, and regulatory capacity. Consequently, the study of internal learning states is not a marginal neuroscientific curiosity; it has direct implications for inclusive educational design, formative assessment, and the creation of environments capable of responding to neurocognitive diversity in a pedagogically responsible manner.

Taken together, the literature indicates that neuropedagogy should be understood as a scientifically ambitious but conceptually disciplined field that seeks to connect neural evidence, cognitive-affective mediation, and pedagogical action. Its foundational premise is that learning is shaped by internal states that are dynamic, embodied, measurable to varying degrees, and educationally consequential. At the same time, the field must avoid reductionism, psychometric naïveté, and technocentric overreach. A robust neuropedagogical framework therefore depends on three interrelated commitments: first, to a theoretically integrative model of internal learning states; second, to methodological rigor in the interpretation of neurophysiological evidence; and third, to ethical and pedagogical reflexivity in the translation of such evidence into educational practice (Fuchs, 2017; Gola, 2024; Rad et al., 2025; Friedman et al., 2026). On this basis, the next step is to examine more specifically how EEG has been used as a methodological tool for investigating cognitive and emotional states relevant to learning, and how this body of evidence may support the development of an EEG-informed neuro-pedagogical framework.

EEG as a Tool for Investigating Cognitive and Emotional States in Learning

Electroencephalography has become one of the most frequently invoked methodological instruments in educational neuroscience due

to its capacity to register neural dynamics with high temporal resolution while remaining comparatively accessible, portable, and adaptable to semi-natural learning contexts. Within neuropsychological research, EEG is particularly valuable because it allows the investigation of cognitive and emotional processes as they unfold in real time, thus making visible dimensions of learning that are difficult to capture through behavioral observation alone. In contrast to retrospective self-report or post hoc performance indicators, EEG offers access to the fluctuating neural correlates of attention, arousal, cognitive effort, emotional modulation, and internally oriented processing, all of which are central to the study of learning as a temporally structured and state-dependent phenomenon (Fernández, 2022; Gola, 2024; Friedman et al., 2026). Its growing relevance within neuropsychology reflects a broader methodological shift from static trait-based accounts of learning toward process-sensitive models capable of addressing the moment-to-moment variability of learner engagement. From a technical standpoint, EEG records electrical activity generated by synchronized postsynaptic potentials, typically through electrodes positioned on the scalp. The resulting signal is analyzed in relation to frequency bands conventionally associated with partially differentiated functional states, most commonly delta, theta, alpha, beta, and gamma rhythms. Although the functional interpretation of these bands must always remain theoretically and contextually constrained, the established literature has repeatedly linked theta activity with memory and executive processes, alpha oscillations with attentional regulation and cortical idling or inhibition, and beta rhythms with alertness, active processing, and cognitive engagement. These associations do not permit simplistic inferential shortcuts, yet they provide a workable starting point for examining the neurophysiological architecture of learning-relevant states (Öner & Hu, 2013; Mák et al., 2018; Fernández, 2022). Within educational contexts, the principal utility of EEG lies not in assigning fixed meanings to isolated waveforms, but in interpreting patterned oscillatory organization in relation to task demands, affective states, and pedagogical conditions.

This methodological position aligns with contemporary educational neuroscience, which increasingly treats learning as a neurocognitively mediated process shaped by interactions among perception, attention, affect, memory, regulation, and context. Lotfi et al. (2023) emphasize that a cognitive neuroscience perspective on learning requires methodological tools capable of capturing how the learner's informational processing system responds dynamically to stimuli, demands, and internal constraints. EEG is well suited to this task because it supports the temporal decomposition of mental processes

without detaching them entirely from ecologically relevant contexts. In classroom-oriented educational neuroscience, this advantage is especially important: pedagogical action unfolds under continuously changing conditions of attentional load, emotional climate, and motivational fluctuation, all of which affect the learner's capacity to process information effectively (Gola, 2024). EEG therefore serves not merely as a measurement device, but as a bridge between neural timing and pedagogical interpretation.

The relevance of EEG for the study of learning also becomes clearer when viewed through developmental and neuropsychological frameworks. The Vygotskian-Lurian tradition conceptualizes higher mental functions as systemic, dynamic, and developmentally mediated, thus encouraging approaches that examine regulation and learning as integrated functional systems rather than isolated capacities (Akhutina & Pylaeva, 2012). EEG contributes to this tradition by offering a way to observe neural signatures associated with attentional readiness, executive modulation, and state variability, thereby complementing behavioral and developmental assessments. At the same time, embodied and phenomenological perspectives remind us that the neural signal is never the whole phenomenon; rather, it indexes organism–environment relations that are lived, situated, and meaningful (Fuchs, 2017). For this reason, the most theoretically coherent uses of EEG in educational inquiry are those that combine electrophysiological data with psychologically and pedagogically interpretable constructs, rather than treating neural activity as a self-sufficient explanatory endpoint.

Historically, even relatively simple EEG paradigms have demonstrated the sensitivity of electrophysiological measures to state differences relevant for cognition. Öner and Hu (2013), for example, showed that one-channel EEG signals can distinguish between eyes-open and eyes-closed conditions, illustrating that neural oscillatory variation can be detected even in minimalist configurations when the state contrast is sufficiently robust. Although such paradigms are methodologically basic, they are conceptually important because they establish the principle that EEG is highly responsive to shifts in vigilance, perceptual orientation, and internal attentional configuration. This principle has since been extended into educational and developmental domains, where more complex paradigms seek to associate neural oscillations with learning readiness, task engagement, and regulatory functioning.

A key contribution to this area is the international overview provided by Mák et al. (2018), who document the increasing use of EEG in early childhood education research. Their review shows that electrophysiological methods have been employed to investigate

developmental aspects of attention, sensory processing, and early cognitive functioning, thereby expanding the methodological repertoire of educational research beyond observational and psychometric approaches. The significance of this body of work lies in its demonstration that EEG can contribute meaningfully to the analysis of learning processes even in young populations, provided that the interpretation of findings remains developmentally informed and methodologically cautious. In other words, EEG is not restricted to laboratory-based adult neuroscience; it has progressively entered educational research as a viable tool for examining neurocognitive precursors and correlates of learning across developmental stages (Mák et al., 2018; Gola, 2024).

More recent scholarship has strengthened the methodological legitimacy of EEG within neuropedagogy by integrating it into broader neuroimaging and neurotechnology frameworks. Fernández (2022) positions neuroimaging as a major epistemic resource for neuropedagogy, arguing that the field benefits from techniques that make learning-related brain activity empirically accessible. Williamson et al. (2025) similarly analyze the expanding role of neurotechnology in the production of “learning brains,” showing that the contemporary convergence of educational neuroscience and neurotechnology has reconfigured how cognition is conceptualized, measured, and governed in educational systems. Within this environment, EEG occupies a distinctive place because it combines temporal granularity with relative practicality, making it especially attractive for educational settings where fully controlled neuroimaging conditions are often impossible. However, this same attractiveness can generate overconfidence in the interpretive power of electrophysiological indicators, which is why theoretical discipline remains essential.

In functional terms, EEG has been used to study several categories of states directly relevant to education: attentional allocation, cognitive workload, emotional arousal, stress reactivity, anxiety, dispositional tendencies, and internally oriented attention. These domains are pedagogically salient because they mediate the learner’s capacity to engage with instructional input, regulate effort, maintain concentration, and adapt to challenge. Adochiei et al. (2023) explored cognitive-emotional characteristics using individual asymmetries of the power spectral density of EEG waves, illustrating how oscillatory imbalances may index differentiated profiles of affective-cognitive functioning. This line of research is highly relevant for neuropedagogy because it suggests that individual variability in information processing may be accompanied by measurable electrophysiological signatures, thereby

opening possibilities for more nuanced understandings of learner heterogeneity.

The use of EEG to investigate stress-related neural patterns also has substantial implications for educational research. Adochiei et al. (2024) examined EEG patterns as indicators of stress, demonstrating that electrophysiological analysis can support the identification of psychophysiological states that may interfere with learning, concentration, and emotional equilibrium. In educational contexts, stress is not merely an ancillary variable but a core modulatory factor that shapes cognitive performance, memory consolidation, and adaptive functioning. The importance of EEG in this regard lies in its capacity to complement subjective stress reports with temporally sensitive physiological indicators, potentially enhancing the precision of research on academic load, evaluative pressure, and classroom climate. Such contributions are especially useful in neuropedagogical models that conceptualize learning as dependent on the interplay between cognitive demand and emotional regulation (Lotfi et al., 2023; Gola, 2024).

A related area concerns the investigation of anxiety and mood-related states. Paraschiv et al. (2024) validated an anxiety assessment method using the g.TEC Unicorn Hybrid Black alongside psychological testing, thereby illustrating the methodological value of multimodal designs in which EEG-derived indicators are interpreted together with conventional psychological measures. This is a particularly important direction for educational neuroscience because it reduces the risk of attributing excessive construct validity to neural signals in isolation. In a complementary vein, Paraschiv et al. (2024) investigated EEG patterns related to depression, showing that electrophysiological configurations may also be informative with respect to more enduring affective disturbances. Although depression and anxiety are not educational constructs per se, their neural correlates are educationally relevant insofar as they affect motivation, concentration, cognitive persistence, and responsiveness to instruction. EEG thus becomes a tool for examining how affective states intersect with learning-related functioning without collapsing psychological complexity into narrow biological categories.

Beyond stress and anxiety, EEG has also been applied to the study of dispositional characteristics that may influence learning behavior. Bănică et al. (2024) examined the correlation between EEG wave patterns and conscientiousness, suggesting that electrophysiological measures may, under carefully circumscribed conditions, reveal associations between neural organization and stable tendencies related to responsibility, persistence, and behavioral control. For educational

research, such findings are significant because traits like conscientiousness are often linked to academic performance, task completion, and self-regulated learning. Yet the educational interpretation of these results must remain cautious. The value of EEG here does not lie in biologizing personality, but in exploring whether dispositional tendencies have functionally relevant neural correlates that help explain variability in cognitive and regulatory engagement.

An especially promising direction for educational theory concerns the use of EEG to investigate internally oriented attention. Manea et al. (2026) proposed a candidate EEG spectral index of internally oriented attention based on an exploratory comparison of prayer and relaxation. Although the study is not situated directly within classroom pedagogy, its conceptual relevance for education is substantial. Internally oriented attention may play a significant role in reflection, contemplative learning, emotional regulation, meaning-making, and forms of deep cognitive integration that are often underrepresented in conventional assessment regimes. By proposing a spectral index linked to this state, the study expands the methodological horizon of EEG-informed educational inquiry beyond externally task-bound attention toward more introspective and self-regulatory dimensions of cognition. This is particularly important for a neuropedagogical framework that seeks to address not only visible engagement but also the internal architectures of reflection and mental orientation.

The educational utility of EEG is further reinforced by applications in intervention and regulation. Neurofeedback-based approaches represent an important extension of electrophysiological research because they transform measurement into a basis for guided self-regulation. Istiarsyah et al. (2026) report the effectiveness of neurofeedback therapy in improving behavior, emotion regulation, and attention in children with autism spectrum disorder. Although this work is positioned at the boundary between clinical intervention and educational support, it has direct neuropedagogical implications. It suggests that EEG-derived information can support not only the analysis of internal states but also their targeted modulation, thus reconfiguring the educational role of neurophysiology from descriptive monitoring to developmental scaffolding. In this respect, EEG is methodologically distinctive because it supports both observation and intervention within a common functional framework.

These advances have encouraged broader pedagogical experimentation. Elouafi et al. (2021) describe neuropedagogical methods designed to connect neuroscience findings with educational practice, while Piddubna et al. (2023) emphasize the implementation of neuropedagogical innovation in schools. Vasilieva et al. (2023) further

highlight the relationship between neuropedagogic approaches and skill formation in primary school students. Although these studies are not all EEG-centered in a narrow sense, they contribute to the rationale for using EEG within educational research by showing that pedagogical design benefits from more differentiated understandings of cognitive and affective functioning. EEG becomes particularly valuable in this context because it can provide temporal and physiological evidence regarding how learners respond to instructional conditions, thereby enriching the evidentiary basis for neuropedagogical intervention.

The expansion of EEG-informed inquiry is also linked to the digitalization of educational environments. Nefedchenko et al. (2023) discuss neuroscience-informed uses of information and communication technologies in education, while Isidori (2025) advances an AI-enhanced psychopedagogy in a performance-intensive digital domain. These developments point toward future configurations in which EEG, AI, adaptive learning systems, and psychopedagogical analytics may increasingly converge. Yet such convergence also intensifies the need for conceptual clarity regarding what EEG can and cannot validly reveal. Educational neuroscience must avoid the impression that more data automatically produce more understanding. As Paraschiv (2016) suggests in a broader reflection on information, entropy, and communication, signal generation alone does not guarantee meaning; interpretation depends on the structure of the model through which information is decoded. This insight is directly applicable to EEG research, where the distinction between signal complexity and construct validity remains fundamental.

Accordingly, psychometric rigor is indispensable. Paraschiv and Zamfirescu (2025) stress the centrality of modern psychometrics in the interpretation of complex measurement systems, and this principle extends fully to EEG-based educational research. Neural signals must be linked to clearly defined constructs, their measurement properties must be scrutinized, and their inferential limits must be explicitly acknowledged. Rad et al. (2025) offer a particularly relevant warning in their critique of measurement paradigms in affective science, showing that technologically sophisticated indicators can create an illusion of objectivity when construct boundaries remain ambiguous. In the context of EEG, this caution applies to any attempt to infer attention, engagement, emotion, or learning quality directly from oscillatory patterns without sufficient theoretical mediation and validation. The methodological strength of EEG lies in its sensitivity to neural dynamics, not in any automatic transparency of mental states.

This issue becomes even more important when EEG findings are translated into educational practice or policy. Colareza et al. (2026) argue for innovative assessment frameworks aligned with inclusion and learning progressions, and EEG-based evidence could contribute to such frameworks if used responsibly. However, the inclusion of neurophysiological data in assessment discourse also raises concerns regarding classification, standardization, and interpretive authority. Grant (2021) has shown that neuroscience-based knowledge cannot be separated from broader questions of privacy, governance, and institutional power. In educational settings, these concerns acquire special significance because learners are positioned within asymmetrical systems of evaluation and intervention. Any use of EEG in educational research or practice must therefore be justified not only methodologically, but also ethically, with careful attention to consent, proportionality, and the pedagogical purpose of data collection (Grant, 2021; Williamson et al., 2025).

Taken together, the literature indicates that EEG has become an indispensable methodological resource for investigating cognitive and emotional states relevant to learning, precisely because it captures the temporal dynamics of neural activity underlying attention, affective modulation, regulatory effort, and internally oriented cognition. Its major strengths include temporal precision, applicability across developmental and applied settings, compatibility with multimodal research designs, and potential relevance for both assessment and intervention. At the same time, its pedagogical value depends on theoretically disciplined interpretation, psychometric caution, and ethical reflexivity. EEG does not replace educational theory; rather, it enriches it by providing empirically tractable access to the neural dimension of internal learning states (Fernández, 2022; Gola, 2024; Rad et al., 2025; Friedman et al., 2026). On this basis, the next step is to synthesize the current empirical evidence more directly, in order to clarify what recent EEG studies collectively reveal about internal learning states and how these findings can support the construction of an integrated neuro-pedagogical framework.

Current EEG evidence on internal learning states

The current body of EEG-based research on internal learning states indicates an increasingly differentiated understanding of how attentional, emotional, stress-related, and regulatory processes can be examined through electrophysiological measures. Although the literature remains methodologically heterogeneous and conceptually uneven, several convergent tendencies can be identified. First, recent studies confirm that EEG is sensitive to state-dependent variations

associated with cognitive-emotional functioning. Second, the most promising contributions do not isolate neural activity from psychological interpretation, but relate oscillatory configurations to meaningful constructs such as stress, anxiety, depression, conscientiousness, and internally oriented attention. Third, the literature suggests that the pedagogical value of EEG lies less in diagnostic finality than in its capacity to enrich models of learner variability, self-regulation, and educational responsiveness (Mák et al., 2018; Piddubna et al., 2023; Friedman et al., 2026).

A first major trend concerns the growing precision with which EEG is being used to identify cognitive-emotional profiles. Adochiei et al. (2023) investigated cognitive-emotional characteristics through the method of individual asymmetries of power spectral density of EEG waves, showing that oscillatory imbalances can be approached as informative indicators of differentiated functioning. This contribution is important because it shifts attention from global, undifferentiated readings of EEG toward more refined spectral configurations capable of capturing individual variability. In the context of internal learning states, such asymmetries are particularly relevant because they may reflect differences in cognitive control, affective responsiveness, and processing style, all of which shape how learners engage with educational demands. The study therefore contributes to a more nuanced electrophysiological vocabulary for understanding learner heterogeneity, especially when cognitive and emotional dimensions are not artificially separated but examined as interdependent functional domains.

A second robust line of evidence concerns stress-related neural signatures. Adochiei et al. (2024) explored EEG patterns as indicators of stress and provided a comprehensive account of how spectral organization may be associated with psychophysiological strain. This finding is especially salient for education because stress is one of the most important modulators of learning efficiency, attentional continuity, emotional stability, and cognitive persistence. What emerges from this literature is not merely the idea that stress “affects” learning, which is already well established, but the stronger proposition that EEG can detect neurophysiological patterns associated with the internal burden under which learning takes place. This is a significant advance for neuropedagogical inquiry, since it opens the possibility of studying academic performance not only as an outcome of knowledge acquisition or strategy use, but also as a function of underlying regulatory states that may facilitate or disrupt information processing. In this sense, EEG-based stress research supports a more process-

oriented view of learning, one that foregrounds internal conditions of cognitive availability rather than external performance alone.

Closely related to stress research is the investigation of anxiety and mood-related states. Paraschiv et al. (2024), through the validation of an anxiety assessment method employing the g.TEC Unicorn Hybrid Black alongside psychological testing, demonstrate the value of combining EEG with psychometric instruments in order to avoid interpretive reductionism. The significance of this approach lies in its methodological balance: neural indicators are not treated as substitutes for psychological constructs, but as convergent sources of evidence within a multimethod framework. For state-of-the-art synthesis, this is a crucial point. The strongest studies in the field are not those that claim direct access to mental states through neural oscillations, but those that integrate electrophysiological measures with validated psychological assessments and theoretically bounded interpretations. The same logic applies to the work of Paraschiv et al. (2024) on EEG patterns related to depression, which suggests that affective dysregulation has measurable neural correlates that may be relevant for understanding diminished motivation, attentional narrowing, and reduced adaptive engagement. From an educational standpoint, these findings matter because depression and anxiety can alter the learner's internal readiness long before such effects are visible in academic output.

Another emerging tendency concerns the association between EEG patterns and dispositional or personality-related dimensions that intersect with learning behavior. Bănică et al. (2024) examined the correlation between EEG wave patterns and conscientiousness, contributing to a growing literature on the electrophysiological correlates of stable behavioral dispositions. Although such studies must be interpreted with caution, they are conceptually important because they suggest that internal learning states do not arise in a vacuum; rather, they may be shaped by more enduring tendencies related to persistence, orderliness, responsibility, and self-discipline. Conscientiousness, in particular, is relevant to educational contexts because it has been repeatedly associated with sustained effort, goal adherence, self-regulation, and academic persistence. EEG research in this area should not be taken as evidence of neural determinism, but it does indicate that dispositional structures may influence the organization of functional states during cognitive engagement. Consequently, the literature is moving toward a more layered model in which internal learning states are shaped both by situational modulation and by relatively stable learner characteristics.

A particularly innovative direction in the recent literature is the attempt to identify EEG correlates of internally oriented attention. Manea et al. (2026) propose a candidate EEG spectral index of internally oriented attention through an exploratory comparison of prayer and relaxation. Within the present review, this contribution occupies a strategic position because it extends the study of internal learning states beyond externally focused attention and reactive emotional modulation toward forms of inwardly directed cognition. This is highly relevant for educational theory, especially in relation to reflection, contemplative practices, metacognitive regulation, and the internal consolidation of meaning. Traditional educational assessment tends to privilege overt performance and task-bound responsiveness, whereas internally oriented attention involves a mode of cognitive organization that is less visible but potentially fundamental for deep learning, self-awareness, and intentional regulation. The study by Manea et al. (2026) therefore marks an important conceptual broadening of EEG-based inquiry by suggesting that electrophysiological research can also address states associated with introspection and internal cognitive alignment.

When these studies are considered together, a broader pattern becomes apparent: the field is progressively moving from coarse state distinctions toward more specific and psychologically interpretable internal-state profiles. Early EEG research in educational settings often focused on general attention, perceptual reactivity, or developmental differences, as documented in the overview provided by Mák et al. (2018). In contrast, recent work increasingly targets more differentiated constructs, including cognitive-emotional asymmetries, stress, anxiety, depressive patterns, conscientiousness, and internally oriented attention. This progression indicates a maturation of the field, not necessarily because the constructs are already fully stabilized, but because the research agenda is becoming more ambitious and conceptually elaborated. The educational relevance of this shift is substantial: rather than asking only whether learners are “engaged” or “not engaged,” EEG research is beginning to ask what kind of engagement is taking place, under what internal conditions, and with what affective-regulatory configuration.

At the same time, the literature reveals persistent methodological and interpretive constraints. One recurring challenge concerns construct validity. EEG signals are highly sensitive but semantically underdetermined; they do not map directly onto educationally meaningful categories without theoretical mediation. This issue is sharply articulated by Rad et al. (2025), who critique the illusion of measurement in affective science and warn against the reification of technologically derived indicators. Their argument is directly pertinent

to the present synthesis: the increasing sophistication of EEG analysis does not eliminate the need for conceptual clarity regarding what is actually being measured. Similarly, Paraschiv and Zamfirescu (2025) underscore the importance of modern psychometrics for validating measurement claims, a principle that applies with particular force to studies attempting to translate oscillatory patterns into constructs such as attention, emotion regulation, or inner orientation. In the absence of rigorous construct specification, EEG risks producing an excess of signal and an insufficiency of interpretive discipline.

A related issue concerns the informational status of electrophysiological data. Paraschiv (2016) argues that information and communication cannot be understood independently of the structures through which signals are organized and interpreted. Applied to EEG, this means that neural data are not inherently meaningful; their explanatory force depends on the inferential framework into which they are embedded. This observation is not merely philosophical. It has direct methodological consequences for state-of-the-art EEG research on internal learning states. Studies that combine electrophysiological indicators with psychological testing, contextual analysis, and theoretically coherent constructs are more persuasive than those relying on isolated signal features. In this respect, the recent literature shows an encouraging movement toward integrated designs, but it also indicates that the field remains vulnerable to overinterpretation when spectral patterns are treated as transparent proxies for complex mental phenomena.

The current synthesis also suggests a noteworthy convergence between EEG-based findings and broader neuropedagogical aims. Elouafi et al. (2021) describe experimental neuropedagogical methods intended to translate neuroscientific insights into educational practice, while Piddubna et al. (2023) emphasize the implementation of neuropedagogical innovation in schools. Vasilieva et al. (2023) further connect neuropedagogic approaches with the formation of primary school students' skills. Although these works are not always centered on EEG specifically, they provide an interpretive context for understanding why internal-state research matters pedagogically. The emerging EEG evidence supports the claim that learning cannot be reduced to externally observable behavior or standardized outcomes, because attentional regulation, emotional burden, and internally directed cognition significantly mediate educational performance. Consequently, electrophysiological studies of internal learning states do not stand at the margins of pedagogy; they increasingly inform the central question of how educational environments might become more responsive to neurocognitive variability.

This convergence is reinforced by broader theoretical accounts of neuropedagogy. Friedman et al. (2026) conceptualize neuropedagogy as a movement from neurons to teaching and learning, highlighting the need to connect neuroscientific evidence with pedagogical applicability. Williamson et al. (2025), however, caution that the rise of neurotechnology in education also carries risks related to governance, categorization, and the production of “learning brains” as administratively legible objects. These tensions are visible in the current EEG literature. On the one hand, electrophysiological research offers promising insights into the internal architecture of learning-related states. On the other hand, its growing pedagogical relevance increases the pressure to stabilize constructs and apply them in evaluative settings where interpretive uncertainty may be underestimated. The literature thus points simultaneously toward methodological promise and epistemic caution.

From an educational policy and assessment perspective, the synthesis aligns with the argument advanced by Colareza et al. (2026), namely that innovative assessment must be responsive to inclusion and learning progressions. EEG research on internal learning states contributes to this agenda by revealing that learners differ not only in achieved performance, but also in the psychophysiological conditions under which performance becomes possible. This is particularly important in contexts where standardized evaluation obscures the role of emotional overload, attentional fluctuation, or self-regulatory instability. The neuropedagogical significance of EEG-based evidence therefore lies in its capacity to support more differentiated educational reasoning, especially in relation to vulnerable learners, atypical developmental profiles, and contexts in which internal burdens are not readily observable through conventional pedagogical tools. In this regard, the Vygotskian-Lurian neuropsychological orientation remains highly relevant, as it frames cognitive difficulties and regulatory variation as systemic and developmentally mediated rather than as isolated deficits (Akhutina & Pylaeva, 2012).

Overall, the state of the art suggests that current EEG evidence on internal learning states can be organized around four major empirical axes: cognitive-emotional asymmetry, stress-related neural reactivity, affective dysregulation, and internally oriented attentional processes. Across these axes, the literature reveals a consistent interest in understanding how neural oscillations relate to states that are educationally consequential but often methodologically elusive. At the same time, the field remains characterized by relatively small-scale studies, construct heterogeneity, and varying levels of psychometric rigor. What is most promising is not the existence of definitive

biomarkers of learning states, but the gradual emergence of an integrative research direction in which EEG is used to refine, rather than replace, psychological and pedagogical interpretation.

The synthesis of the studies reviewed above reveals a gradual evolution in the way internal learning states are conceptualized and investigated within educational neuroscience and neuropedagogy. Early theoretical contributions emphasized neuropsychological foundations of cognitive regulation and learning processes, while subsequent research increasingly explored the feasibility of using EEG to capture attention, affective dynamics, and self-regulatory processes in educational contexts. More recent studies extend this perspective by integrating EEG-based indicators with pedagogical frameworks and classroom-relevant learning environments.

These developments suggest that neuropedagogy is progressively moving from isolated neuroscientific observations toward integrative models that link neural indicators, psychological constructs, and pedagogical practice. In order to illustrate this trajectory, Figure 1 synthesizes key milestones in the development of neuro-pedagogical frameworks informed by EEG research, highlighting the conceptual progression from neuropsychological foundations to contemporary models of EEG-informed educational research.

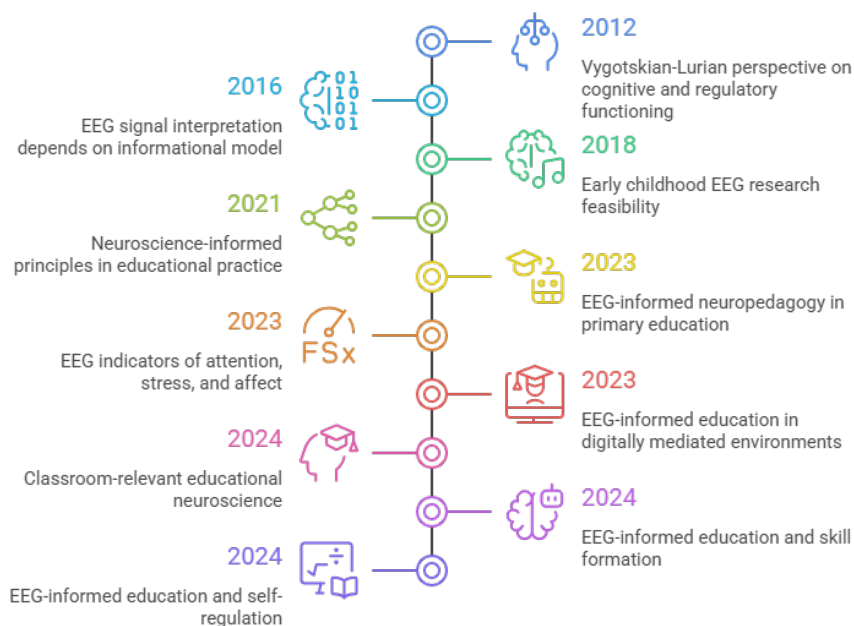


Figure 1. Evolution of neuro-pedagogical frameworks integrating EEG evidence and educational research perspectives.

Thus, the present synthesis supports three main conclusions. First, EEG research has become increasingly capable of distinguishing among multiple internal states relevant to learning, moving beyond generalized accounts of attention toward more differentiated constructs. Second, the most methodologically credible studies are those that combine electrophysiological analysis with psychological validation and theoretically bounded interpretation. Third, the literature collectively indicates that internal learning states should be treated as central mediators of educational functioning, not as ancillary variables secondary to observable performance. These conclusions create the foundation for the final step of the review: the articulation of a future-oriented neuro-pedagogical framework capable of integrating current EEG evidence into a coherent model for research, assessment, and educational practice.

Toward a neuro-pedagogical framework: future pathways for EEG-informed education

The literature reviewed across the previous sections supports the need for a neuro-pedagogical framework capable of integrating electrophysiological evidence, cognitive-affective theory, psychometric rigor, and pedagogical applicability into a coherent model of educational inquiry. Such a framework should not be conceived as a technocentric extension of neuroscience into schooling, nor as a reductive attempt to translate brain signals directly into educational decisions. Rather, it should be understood as a structured conceptual architecture through which EEG-derived information can be meaningfully related to internal learning states, interpreted through validated psychological constructs, and transformed into pedagogically relevant knowledge. In this sense, EEG-informed education requires a framework of mediation, not substitution: neural evidence should complement, refine, and sometimes challenge educational interpretation, but never replace the theoretical and contextual complexity of pedagogy itself (Friedman et al., 2026; Williamson et al., 2025).

At the core of such a framework lies the assumption that learning is mediated by internal states that are dynamic, multidimensional, and context-sensitive. Attention, emotional regulation, stress reactivity, motivational readiness, internally oriented cognition, and self-regulatory control do not operate as isolated variables; they form interacting configurations that shape the learner's capacity to engage with educational tasks. The reviewed evidence suggests that EEG can contribute to the study of these configurations by providing temporally

sensitive indicators of their neural organization. However, the educational significance of EEG does not reside in any claim to direct access to mental reality. Its value lies in the possibility of identifying functional neural patterns associated with internal states that are educationally consequential but only partially accessible through behavioral or self-report measures. A neuro-pedagogical framework must therefore begin from a layered ontology: EEG indexes neural dynamics; these neural dynamics are interpreted in relation to psychological states; and those psychological states become pedagogically relevant only within concrete instructional, developmental, and sociocultural contexts (Akhutina & Pylaeva, 2012; Friedman et al., 2026).

From this perspective, the proposed framework can be organized around three interdependent levels: the neurophysiological level, the psycho-educational level, and the pedagogical decision level. At the neurophysiological level, EEG provides indicators of oscillatory organization, spectral asymmetry, and state-dependent variation, allowing researchers to examine fluctuating neural correlates of attention, stress, affective activation, and inward orientation. Studies on cognitive-emotional asymmetries, stress-related EEG patterns, depression-linked oscillatory configurations, anxiety assessment, conscientiousness-related neural variation, and internally oriented attention collectively demonstrate that EEG can register meaningful differences in the functional organization of internal states (Adochiei et al., 2023; Adochiei et al., 2024; Paraschiv et al., 2024; Bănică et al., 2024; Paraschiv et al., 2024; Manea et al., 2026). These data, however, acquire educational meaning only when interpreted through the second level of the framework.

At the psycho-educational level, neural indicators must be translated into theoretically bounded constructs such as attentional stability, emotional burden, regulatory readiness, reflective inwardness, or cognitive-emotional disequilibrium. This level is indispensable because EEG patterns do not carry pedagogical implications independently of construct validation. Here, psychometrics and construct theory play a decisive role. The warning advanced by Rad et al. (2025) regarding the illusion of measurement in affective science is especially relevant: the apparent objectivity of neural indicators may conceal substantial ambiguity if the target construct has not been clearly delimited. Likewise, the psychometric perspective advanced by Paraschiv and Zamfirescu (2025) suggests that any EEG-informed educational model must incorporate evidence of validity, conceptual precision, and inferential transparency. A neuro-pedagogical framework should therefore resist any direct conversion of spectral features into

educational labels. Instead, it should formalize a model in which EEG contributes probabilistic and context-dependent evidence regarding internal learning states, always interpreted in conjunction with psychological theory and complementary assessment methods.

At the pedagogical decision level, the goal is not to neurologize teaching, but to enrich educational design, assessment, and intervention through a better understanding of the learner's internal conditions of engagement. In this respect, the literature on neuropedagogical implementation is particularly instructive. Experimental neuropedagogical methods have already illustrated how neuroscience-informed principles can be translated into educational practice when the emphasis is placed on adaptability, learner variability, and context-sensitive support (Elouafi et al., 2021). Similarly, the implementation of neuropedagogical innovation in schools and the relationship between neuropedagogic approaches and skill formation in primary education suggest that educational environments benefit when they become more responsive to differentiated cognitive and affective functioning (Pidubna et al., 2023; Vasilieva et al., 2023). An EEG-informed framework extends this logic by proposing that pedagogical decisions can be refined through knowledge about the internal states that mediate learning, especially in situations where observable performance offers only partial insight into the learner's functional readiness.

One of the principal future pathways for this framework concerns the development of multimethod research designs. The state of the art already indicates that the most credible EEG studies are those that combine electrophysiological measures with psychological testing, behavioral tasks, developmental interpretation, and pedagogical observation. This multimethod orientation should become a defining standard of future EEG-informed educational research. Electrophysiological indicators of stress, anxiety, or internally oriented attention gain educational legitimacy when triangulated with validated scales, contextual analysis, and meaningful learning outcomes (Paraschiv et al., 2024; Adochiei et al., 2024; Manea et al., 2026). Future research should therefore move away from mono-indicator inference and toward integrated designs capable of relating neural temporal patterns to instructional conditions, emotional experiences, and forms of learner adaptation. Such an approach would also better align educational neuroscience with the complexity of real classrooms, where internal states are shaped by interaction, feedback, environmental stressors, and task structure rather than by isolated laboratory manipulations.

A second major pathway involves the refinement of construct-specific EEG models for educationally relevant states. Current evidence suggests that attention, stress, emotional dysregulation, and inward orientation are promising domains for continued development, but the field still lacks sufficient conceptual stabilization regarding their electrophysiological signatures in educational settings. Future studies should therefore aim to define more precisely which dimensions of attention are being measured, what forms of stress are most educationally disruptive, how affective burden interacts with task engagement, and under what circumstances internally oriented attention supports rather than impedes learning. The exploratory work of Manea et al. (2026) is particularly valuable in this respect because it opens a line of inquiry into reflective and contemplative states that are central to deeper forms of learning but rarely addressed in conventional educational measurement. A robust neuro-pedagogical framework should include space for both externally task-focused and internally self-regulatory forms of cognition, thus broadening the conceptual map of what counts as educationally relevant mental activity.

A third future direction concerns developmental and inclusive applications. The literature strongly suggests that EEG-informed research may be especially useful in contexts where internal states play a critical role in learning variability, such as early childhood, neurodevelopmental conditions, emotional vulnerability, or learning difficulties. The Vygotskian-Lurian perspective remains crucial here because it conceptualizes cognitive and regulatory functioning as systemic and developmental, thereby encouraging educational models that do not pathologize learner differences but interpret them within broader functional configurations (Akhutina & Pylaeva, 2012). Early childhood EEG research has already demonstrated the feasibility of studying neurocognitive aspects of learning in young populations (Mák et al., 2018), while neurofeedback-related work with children with autism spectrum disorder indicates that electrophysiological data can also support intervention-oriented strategies aimed at improving attention and emotion regulation (Istiarsyah et al., 2026). Future EEG-informed neuropedagogy should therefore prioritize inclusive and developmental sensitivity, using neural evidence to support differentiated education rather than normative standardization.

A fourth pathway concerns the integration of EEG with digitally mediated and AI-supported educational environments. The broader literature on neuroscience in education, ICT integration, and AI-enhanced psychopedagogy indicates that future educational systems will increasingly combine cognitive modeling, digital data streams, and adaptive feedback architectures (Nefedchenko et al., 2023; Isidori,

2025). Within this emerging landscape, EEG may function as one source of high-resolution state information capable of informing adaptive learning environments, neurofeedback-supported educational tools, or reflective interfaces oriented toward self-regulation and well-being. Yet this trajectory also intensifies the need for epistemic caution. As Williamson et al. (2025) argue, the rise of neurotechnology in education risks producing learners as administratively legible neural subjects, especially when measurement systems are incorporated into governance and optimization agendas. Accordingly, any future convergence of EEG, AI, and pedagogy must remain subordinate to educational ethics, theoretical clarity, and proportional use.

This leads to a fifth pathway, namely the ethical and governance dimension of EEG-informed education. Any neuro-pedagogical framework that seeks future relevance must explicitly include principles of privacy, autonomy, informed consent, interpretive accountability, and limited inference. Grant (2021) demonstrates that neuroscience-based knowledge raises substantial legal and political questions because neural data occupy a uniquely sensitive position between the person, the institution, and the market. In educational settings, this sensitivity is amplified by age asymmetries, evaluative power structures, and the vulnerability of learners within institutional systems. Therefore, future EEG-informed education should not be guided exclusively by the question of what can be measured, but equally by the questions of what should be measured, for what purpose, under what safeguards, and with what pedagogical justification. A credible neuro-pedagogical framework must incorporate ethics not as an external add-on, but as one of its constitutive dimensions.

Another important direction concerns assessment. The emerging discussion on innovative assessment and learning progressions suggests that educational systems need more differentiated ways of understanding learner functioning, especially in contexts marked by inclusion challenges and uneven developmental trajectories (Colareza et al., 2026). EEG does not offer a replacement for assessment, nor should it be introduced as a hidden layer of neuroclassification. Its future educational value lies rather in its potential contribution to formative and research-oriented assessment models capable of identifying when poor performance may reflect internal-state constraints rather than lack of competence or effort. For example, attentional instability, excessive stress, or affective burden may compromise task performance without reflecting the actual developmental potential of the learner. A neuro-pedagogical framework informed by EEG could thus support more context-aware

interpretations of educational outcomes, especially when combined with observational, psychometric, and curricular evidence.

Methodologically, future research should also prioritize replicability, construct coherence, and ecological validity. Many existing EEG studies remain exploratory, small-scale, or context-limited, which is understandable in an emerging interdisciplinary field but insufficient for broader pedagogical generalization. Future investigations should therefore include larger samples, clearer task paradigms, stronger multimodal validation, and designs that better approximate educational reality. Classroom-compatible EEG paradigms, ecologically valid cognitive tasks, and longitudinal studies linking internal states to actual learning trajectories would be particularly valuable. Equally important is the need to improve theoretical alignment between electrophysiological findings and educational concepts. As Paraschiv (2016) reminds us, signal interpretation always depends on the informational model within which the signal is embedded. Future EEG-informed education must therefore avoid data accumulation without conceptual architecture; it requires models in which neural patterns, psychological constructs, and educational processes are systematically aligned.

At a broader level, the proposed framework also invites a reconceptualization of pedagogy itself. Neuropedagogy does not imply that teaching should become neuroscientific in form, but that pedagogy may benefit from a more explicit recognition of the internal architectures that condition learning. Gola (2024) emphasizes the classroom relevance of educational neuroscience, while Friedman et al. (2026) frame neuropedagogy as a movement from neuronal understanding to teaching and learning. Building on these perspectives, EEG-informed education can be understood as a future-oriented pedagogical paradigm in which instructional design, learner support, and educational assessment become increasingly sensitive to the temporal dynamics of attention, affect, regulation, and internal orientation. This does not diminish the role of culture, dialogue, curriculum, or teacher judgment; on the contrary, it deepens pedagogical reasoning by situating learning within a more comprehensive model of human functioning.

In conclusion, a future-oriented neuro-pedagogical framework for EEG-informed education should rest on several core principles: theoretical non-reductionism, construct-valid interpretation, multimethod integration, developmental and inclusive sensitivity, ethical accountability, and pedagogical relevance. EEG can play a valuable role in this framework because it offers access to the neural temporality of internal learning states, but its contribution becomes

meaningful only when embedded within psychologically coherent and educationally justified models. The literature reviewed in this paper suggests that the field is now ready to move beyond isolated proof-of-concept studies toward a more integrated research program in which EEG is used to clarify the internal conditions of learning, refine educational interpretation, and support more responsive pedagogical practices. In this sense, the future of EEG-informed education does not lie in the search for simplistic neural markers of learning success, but in the construction of a disciplined and conceptually mature neuropedagogy capable of linking brain dynamics, internal states, and educational action into a coherent scientific framework.

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RESTORATIVE PSYCHOSOCIAL INTERVENTIONS AT THE INTERSECTION OF SOCIAL WORK, MIGRATION, AND PROBATION SERVICES

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Abstract: *Contemporary migration dynamics increasingly intersect with criminal justice systems, generating complex challenges for probation services and social work practice. Migrants involved in probation supervision often experience multiple forms of vulnerability, including legal uncertainty, socio-economic marginalization, cultural barriers, and limited access to institutional resources. These conditions require integrated responses that combine legal supervision with psychosocial and community-based interventions. This paper examines restorative psychosocial interventions at the intersection of social work, migration, and probation services, with a focus on the legal, institutional, and professional frameworks that shape contemporary probation practice. Drawing on interdisciplinary literature from social work, criminology, and legal studies, the study explores how restorative justice approaches can support rehabilitation, accountability, and social reintegration among migrant populations involved in criminal justice systems. The analysis highlights the role of probation services as hybrid institutions that combine legal oversight with social work interventions designed to address structural vulnerabilities and promote desistance from crime. Particular attention is given to culturally competent practice, interdisciplinary collaboration, and trauma-informed approaches as key components of effective restorative interventions. The paper further discusses implications for professional practice and policy development, emphasizing the importance of rights-based frameworks, institutional coordination, and community-oriented rehabilitation programs. By integrating restorative justice principles with*

psychosocial support mechanisms, probation systems can better respond to the complex realities of migration while promoting social inclusion, procedural fairness, and long-term reintegration.

Keywords: *restorative justice; probation services; migration; forensic social work; psychosocial interventions.*

Migration, vulnerability, and contact with the criminal justice system

Contemporary migration dynamics have intensified the interaction between social protection systems and criminal justice institutions, creating complex challenges for policymakers, legal professionals, and social workers. Migration processes frequently intersect with structural inequalities that shape individuals' access to employment, housing, education, and health services. In such contexts, migrants may experience layered vulnerabilities that increase the likelihood of contact with legal institutions, including probation services. Social work literature consistently highlights how migration-related marginalization may amplify psychosocial stressors, including discrimination, social isolation, and limited access to institutional resources (Lorenz, 2017; Payne, 2020). These structural pressures may influence pathways into the criminal justice system and complicate the reintegration trajectories of migrants subjected to judicial supervision.

Within this framework, migrants involved in probation systems often face cumulative disadvantages that extend beyond legal supervision. Precarious labor conditions, unstable housing arrangements, and fragmented social networks frequently undermine compliance with probation requirements and reduce opportunities for social reintegration. Research on immigrant families and vulnerable populations demonstrates that social workers frequently encounter situations in which institutional expectations exceed the actual support capacity available to migrant communities, generating ethical tensions and professional dilemmas in practice (Olcoñ & Gulbas, 2021; Yakhnich & Teichman, 2015). These circumstances highlight the need for probation interventions that move beyond purely legal compliance mechanisms toward integrated psychosocial support strategies.

The institutional role of probation services has evolved significantly in recent decades, reflecting broader transformations within criminal justice systems and social welfare governance. Historically associated primarily with supervision and risk management, probation services have increasingly incorporated rehabilitative and community-oriented functions (Robinson et al., 2016). These transformations have occurred

alongside structural reforms in several European systems, including processes of privatization, organizational restructuring, and changing professional identities among probation practitioners (Kirtton & Guillaume, 2019). As forensic social work has expanded as a professional field, practitioners have been required to integrate legal mandates with psychosocial assessment and intervention strategies designed to reduce recidivism and support long-term reintegration (Bosker & Menger, 2025).

The interaction between migrants and criminal justice institutions must also be understood within the broader context of legal frameworks governing rights, obligations, and procedural guarantees. Legal scholarship emphasizes that criminal investigations and judicial procedures must respect fundamental rights, including proportionality, procedural fairness, and access to justice (Apachiței, 2020a; Apachiței, 2024a). These principles remain particularly relevant when migrants become involved in legal processes, as their unfamiliarity with institutional procedures may increase the risk of procedural misunderstandings or unequal treatment. Moreover, emerging forms of criminality, including cybercrime and transnational offenses, have further complicated the legal landscape in which migration and criminal justice intersect (Apachiței & Ichim, 2023; Apachiței, 2021).

Another dimension shaping the relationship between migration and criminal justice concerns the increasing importance of national security considerations within legal systems. Contemporary legal debates highlight how offenses related to national security, cyber threats, and transnational criminal networks require complex investigative procedures and coordinated institutional responses (Apachiței, 2022; Apachiței, 2025). These developments may indirectly affect migrant populations, particularly when migration governance intersects with broader security policies. In such contexts, legal scholars emphasize the importance of maintaining a balance between security measures and the protection of constitutional rights and freedoms (Apachiței, 2019; Apachiței, 2020b).

At the same time, European social work research stresses that migrants frequently encounter systemic barriers when attempting to access social services and legal assistance. These barriers include linguistic challenges, administrative complexity, and limited institutional sensitivity toward cultural diversity. For instance, probation officers and social workers operating in multicultural contexts must develop intercultural competencies in order to effectively communicate with clients and address culturally specific forms of vulnerability (Ghanem, 2018). Without such competencies, probation interventions risk reinforcing social exclusion rather than facilitating reintegration.

The intersection between migration and criminal justice also raises broader questions regarding the role of social policies in addressing social inequality. Studies examining migrant labor sectors and welfare systems demonstrate that structural labor market segmentation often exposes migrants to precarious employment conditions and limited social protections (Di Rosa et al., 2012). These socio-economic constraints may indirectly contribute to vulnerability pathways that intersect with criminal justice systems, particularly when individuals face financial instability or social marginalization.

Furthermore, the criminalization of certain social phenomena has historically influenced the relationship between social work and legal institutions. For example, the legal regulation of domestic violence illustrates how criminal justice frameworks and social intervention strategies may become intertwined in addressing complex social problems (Danis, 2003). Similar dynamics emerge in probation contexts involving migrants, where legal supervision must be accompanied by psychosocial interventions capable of addressing underlying social and psychological factors.

Taken together, these dynamics reveal that migrants' contact with probation services cannot be interpreted solely as a matter of legal supervision. Instead, it reflects the interaction between structural inequalities, institutional frameworks, and psychosocial vulnerabilities. Effective probation practice therefore requires an interdisciplinary perspective that integrates legal analysis with social work principles and restorative approaches. By recognizing the multifaceted nature of migrants' experiences within criminal justice systems, practitioners and policymakers can design interventions that simultaneously promote legal accountability, psychosocial support, and social inclusion.

The legal and institutional framework of probation services in migrant contexts

Probation services represent a central institutional component of contemporary criminal justice systems, particularly within European jurisdictions that increasingly emphasize community-based sanctions and alternatives to incarceration. These systems combine legal supervision with rehabilitative objectives, reflecting a broader shift toward socially oriented justice models that aim to balance public safety with reintegration and social justice considerations (Canton, 2024; Smith & Vanstone, 2002). Historically rooted in the traditions of social work, probation has evolved through complex institutional transformations, moving from welfare-oriented interventions toward risk management frameworks and later toward hybrid models

integrating both supervisory and rehabilitative roles (Payne, 2020; Raynor & Vanstone, 2016). As such, probation services function not merely as instruments of legal enforcement but also as mechanisms for supporting behavioral change and social reintegration.

The legal architecture of probation systems is typically grounded in principles such as proportionality, rehabilitation, and procedural fairness. These principles ensure that community sanctions are applied in ways that respect fundamental rights while promoting accountability and reducing recidivism. Legal scholars emphasize that the proportionality principle plays a crucial role in balancing punitive measures with the protection of individual rights within criminal justice procedures (Apachiței, 2020a). In addition, contemporary criminal investigations increasingly involve technologically complex environments, including cybercrime and digital evidence, which require careful procedural safeguards to ensure that fundamental rights remain protected throughout investigative processes (Apachiței, 2024a; Apachitei, 2021). These legal considerations influence how probation measures are implemented, particularly when individuals are subject to ongoing judicial supervision.

When migrants become involved in probation systems, additional legal and institutional complexities often emerge. Migration status may intersect with criminal justice procedures through residence permits, deportation regulations, or cross-border legal frameworks governing mobility and jurisdiction. These overlapping legal regimes create unique challenges for probation officers and social workers responsible for case management. In such contexts, legal scholarship underscores the importance of coherent institutional coordination to ensure that legal procedures do not undermine the protection of fundamental rights or create disproportionate restrictions on individuals' social participation (Apachiței, 2019; Apachiței, 2022). Furthermore, legal systems increasingly recognize that certain offenses, particularly those linked to national security or transnational criminal activities, require specialized investigative approaches that may indirectly affect migrants involved in judicial procedures (Apachiței, 2025; Apachitei & Sîrcu, 2023).

Within probation practice, the integration of legal mandates with social work principles has become increasingly important. Scholars emphasize that probation should not be understood solely as a mechanism of surveillance but rather as a form of applied social work embedded within the criminal justice system (Canton, 2024). This perspective highlights the historical and professional connections between probation services and social work practice, where supervision is combined with counseling, support, and community

reintegration strategies (Raynor & Vanstone, 2016). The concept of probation as a hybrid legal–social institution has gained particular relevance in the context of migration, where clients often require both legal guidance and psychosocial support.

Migration-related mobility further complicates the institutional landscape in which probation services operate. Global migration patterns have transformed the demographic composition of many societies, leading to increased diversity among individuals interacting with social welfare and criminal justice systems (Williams & Graham, 2014). For probation professionals, this shift requires new competencies in cultural sensitivity, legal literacy, and interdisciplinary collaboration. Practitioners must navigate complex institutional arrangements involving immigration authorities, social service agencies, and community organizations in order to provide effective supervision and support.

The interaction between migration governance and probation services also reflects broader social policy developments. European welfare systems have undergone significant restructuring in recent decades, affecting the organization of probation services and the professional roles of those working within them (Kirton & Guillaume, 2019). These transformations have influenced occupational cultures and professional identities among probation practitioners, particularly as services adapt to changing political priorities and administrative reforms (Burke et al., 2017). In some contexts, these reforms have raised concerns regarding the balance between managerial control, professional autonomy, and the traditional rehabilitative ethos associated with social work practice. From a social work perspective, migrants involved in probation supervision frequently face additional structural barriers that extend beyond legal processes. Socio-economic marginalization, language barriers, and limited access to welfare resources may hinder their ability to comply with probation conditions or to successfully reintegrate into the community (Lin et al., 2018). Research examining migrant labor sectors further illustrates how structural inequalities can shape migrants' living conditions and employment opportunities, influencing broader patterns of social vulnerability (Di Rosa et al., 2012). These socio-economic constraints highlight the importance of integrating social policy interventions with probation practices in order to address underlying causes of marginalization.

Human rights frameworks have increasingly emphasized the need for equitable access to justice and social services for migrants and asylum seekers. Social work scholars advocate for rights-based practice models that recognize migrants not merely as recipients of supervision but as individuals entitled to dignity, participation, and social

protection (Androff & Mathis, 2022). In this context, probation services must operate within legal frameworks that ensure non-discriminatory treatment and respect for procedural safeguards while simultaneously supporting rehabilitative goals.

At the same time, practitioners working with migrants in criminal justice contexts frequently encounter ethical tensions and professional challenges. Research on providers supporting immigrant families highlights the moral distress experienced by professionals when institutional resources are insufficient to meet the complex needs of vulnerable populations (Olcoń & Gulbas, 2021). Similar dynamics can occur within probation systems, where social workers must balance institutional responsibilities with ethical commitments to social justice and client well-being.

Another important dimension concerns the organizational structures within which probation and social work services operate. Contemporary research emphasizes the importance of reflective supervision and organizational learning processes in supporting effective professional practice. Supervision models grounded in reflective practice can enhance professional resilience, improve decision-making processes, and support ethical case management within complex institutional environments (Vişcu & Rad, 2024a; Vişcu & Rad, 2024b). In addition, the development of learning-oriented social work institutions has been identified as a key factor in strengthening professional competence and institutional adaptability (Viscu et al., 2025).

Emerging research also highlights innovative approaches designed to improve the effectiveness of social work interventions in complex social contexts. For instance, ecological momentary interventions have been proposed as a psychological strategy for enhancing client well-being through context-sensitive support mechanisms (Cadariu & Rad, 2025a). Similarly, efforts to address emotional regulation and burnout among social workers emphasize the importance of sustainable professional practices in demanding institutional settings (Cadariu & Rad, 2025b). These developments demonstrate the growing recognition that effective probation practice requires not only legal expertise but also strong psychosocial and organizational capacities.

The professional responsibilities of social workers operating within probation systems are therefore multifaceted. They involve legal case management, psychosocial assessment, community coordination, and advocacy for vulnerable clients (Viscu & Rad, 2025). In addition, contemporary research on forensic social work emphasizes the importance of trauma-informed approaches that recognize the psychological impact of criminal justice involvement on individuals

and communities (Rad et al., 2025). Such approaches align with broader trends in social work research, including studies on vocational identity, professional development, and evidence-based interventions aimed at supporting vulnerable populations (Cadariu & Rad, 2025c; Cadariu & Rad, 2025d).

Finally, institutional collaboration remains a fundamental requirement for effective probation systems in migrant contexts. Interdisciplinary partnerships between legal institutions, social services, educational organizations, and civil society actors are essential in order to address the complex needs of migrants under supervision. Social work research emphasizes that integrated intervention models are more effective in promoting long-term reintegration, reducing recidivism, and supporting community cohesion (Potocky, 2002; Chang-Muy & Congress, 2023). Through such collaborative frameworks, probation services can move beyond fragmented interventions and contribute to restorative and rehabilitative practices that strengthen social inclusion while upholding legal accountability.

In this sense, the legal and institutional framework governing probation services must be understood as a dynamic system situated at the intersection of law, social policy, and professional practice. By integrating legal safeguards with psychosocial interventions and interdisciplinary cooperation, probation systems can more effectively address the challenges associated with migration and social vulnerability in contemporary societies.

Restorative psychosocial interventions in probation practice

Restorative justice has increasingly emerged as a central paradigm within contemporary criminal justice systems, reflecting a broader shift from punitive models toward approaches that prioritize rehabilitation, accountability, and community healing. Within probation practice, restorative psychosocial interventions represent an integrative framework that combines legal supervision with therapeutic and community-oriented strategies aimed at addressing the social and psychological dimensions of offending behavior. These interventions emphasize the repair of harm, the restoration of social relationships, and the development of personal responsibility while promoting reintegration into the community (Umbreit, 2023; González, 2023).

The conceptual foundations of restorative justice are closely aligned with social work values that emphasize dignity, participation, and social inclusion. Instead of focusing exclusively on punishment, restorative approaches seek to create dialogical processes in which offenders, victims, and community members engage in constructive dialogue about the consequences of harmful actions. Such processes

may involve victim–offender mediation, restorative conferencing, or community-based dialogue initiatives designed to facilitate mutual understanding and accountability (Umbreit, 2023). Within probation contexts, these mechanisms contribute to transforming supervision from a purely control-oriented activity into a process of structured social reintegration.

In practice, restorative psychosocial interventions implemented in probation services frequently involve a range of multidisciplinary strategies. These may include mediation programs, therapeutic counseling, community reconciliation initiatives, and structured restorative dialogues. Empirical research indicates that restorative justice diversion programs can function not only as legal alternatives to incarceration but also as public health interventions that address the structural determinants of criminal behavior, including social marginalization, trauma, and community disintegration (González, 2023). Through these mechanisms, restorative interventions seek to create environments where behavioral change is supported through constructive social engagement rather than coercive institutional responses.

Within probation practice involving migrants, restorative approaches require additional cultural and psychosocial sensitivity. Migrants may experience complex psychological stressors related to displacement, migration trauma, or experiences of discrimination in host societies. These factors may influence both the circumstances of offending and the challenges associated with rehabilitation. Studies focusing on migrant survivors of trafficking and other forms of exploitation emphasize the importance of integrative psychosocial, legal, and social support mechanisms capable of addressing these multilayered vulnerabilities (Ahmedova et al., 2025). Consequently, restorative interventions in migrant contexts must be adapted to account for cultural diversity, linguistic barriers, and the specific psychosocial needs associated with migration experiences.

Probation officers and social workers occupy a crucial position in facilitating restorative processes. Their role extends beyond monitoring compliance with legal conditions to include mediation, psychosocial assessment, and the coordination of interdisciplinary support services. Research examining juvenile probation practice demonstrates that rehabilitation and reintegration are most effective when probation officers adopt supportive and participatory approaches that encourage behavioral reflection and community engagement (Khan et al., 2023). Such approaches resonate with restorative justice principles, which prioritize constructive dialogue and personal accountability over purely punitive responses.

Restorative psychosocial interventions have also been implemented in specialized correctional programs addressing specific forms of offending behavior. For example, comparative studies examining court-mandated interventions for domestic violence perpetrators have found that restorative justice programs can produce outcomes comparable to, or in some cases more effective than, traditional intervention models focused solely on behavioral control (Mills et al., 2013). Similarly, systematic reviews of intervention programs for perpetrators of intimate partner violence highlight the importance of addressing underlying psychosocial risk factors, including substance abuse, emotional dysregulation, and relational conflict (Exposito-Alvarez et al., 2023). These findings underscore the importance of integrating psychological support with restorative accountability mechanisms within probation interventions.

Another dimension of restorative practice involves community-based educational and participatory initiatives designed to strengthen collective responsibility for conflict resolution. Research on restorative strategies implemented in juvenile justice systems demonstrates that cooperative learning and community education programs can play a significant role in diversion processes, helping young offenders develop social competencies and reintegrate into supportive social environments (Wardianti et al., 2026). Such initiatives highlight the broader societal dimension of restorative justice, which seeks to rebuild community cohesion while addressing individual behavioral change.

Within the field of social work, restorative interventions are increasingly conceptualized as part of a broader ecosystem of therapeutic and community-based practices. Systemic family therapy models, for example, emphasize the importance of addressing relational dynamics within families and communities in order to support sustainable behavioral change. These approaches align closely with restorative justice principles, as both frameworks emphasize relational healing and collective responsibility (Cadariu & Rad, 2025a). By integrating systemic therapeutic approaches with restorative dialogue mechanisms, probation services can address the broader social environments in which offending behavior occurs.

The growing importance of trauma-informed social work has further reinforced the relevance of restorative psychosocial interventions within criminal justice settings. Research exploring developments in forensic social work highlights how trauma-informed frameworks enable practitioners to recognize the psychological impact of violence, institutionalization, and social marginalization on individuals involved in criminal justice systems (Rad et al., 2025). When applied within probation practice, trauma-informed approaches support restorative

processes by fostering empathy, emotional awareness, and constructive coping mechanisms.

Effective implementation of restorative interventions also depends on organizational and professional capacities within social work institutions. Reflective supervision has been identified as a critical mechanism for supporting practitioners working in complex and emotionally demanding environments. Through structured reflection and professional dialogue, supervision models enable social workers to manage ethical dilemmas, enhance professional judgment, and maintain resilience when working with vulnerable populations (Vișcu & Rad, 2024a; Vișcu & Rad, 2024b). Such supervision structures are particularly relevant in restorative justice contexts, where practitioners must balance legal obligations with therapeutic and community-oriented responsibilities.

Institutional learning processes also play an essential role in supporting the development of restorative practices within probation services. Organizations that function as learning-oriented institutions are better equipped to adapt to evolving social challenges and to integrate innovative intervention strategies into professional practice (Viscu et al., 2025). These institutional dynamics enable probation services to incorporate emerging psychosocial approaches, including ecological momentary interventions that provide context-sensitive support aimed at improving client well-being and behavioral outcomes (Cadariu & Rad, 2025b).

Sustainable restorative practice also requires attention to the well-being and professional identity of social workers themselves. Research on emotional regulation and burnout prevention emphasizes that professionals working in high-demand environments, such as probation services, require psychological support and organizational structures that promote resilience and sustainable practice (Cadariu & Rad, 2025c). Strengthening professional identity and competencies among social workers contributes to more effective restorative interventions and enhances the overall quality of probation supervision (Cadariu & Rad, 2025d).

Moreover, restorative psychosocial interventions contribute to broader preventive strategies aimed at addressing social exclusion and vulnerability. Evidence-based social work research highlights the role of professionals in supporting educational participation, preventing social marginalization, and strengthening community engagement among vulnerable populations (Cadariu & Rad, 2025e). These preventive dimensions complement restorative justice frameworks by addressing structural factors that may contribute to criminal behavior and social exclusion.

Recent interdisciplinary research further emphasizes the connection between restorative justice, desistance theory, and long-term rehabilitation. Studies examining correctional interventions demonstrate that successful desistance from crime often involves complex processes of identity transformation, social support, and constructive community engagement (Mihăilă et al., 2025). Restorative psychosocial interventions contribute to these processes by creating opportunities for individuals to rebuild pro-social identities and establish meaningful relationships within their communities.

The integration of restorative practices into probation services therefore reflects a broader transformation within criminal justice systems. Rather than relying exclusively on punitive measures, contemporary approaches increasingly recognize the importance of psychosocial support, relational repair, and community participation in promoting sustainable rehabilitation. In this sense, restorative psychosocial interventions represent not merely an alternative to punishment but a comprehensive framework that integrates legal accountability, psychological healing, and social reintegration within probation practice (Vlai & Rad, 2025).

Implications for social work practice and policy development

The intersection of migration, probation, and social work generates complex implications for professional practice and policy design. Addressing the needs of migrants within probation systems requires a multidimensional framework that integrates legal expertise, psychosocial intervention strategies, and community-oriented approaches. Social workers operating within probation contexts must navigate institutional mandates, ethical responsibilities, and structural inequalities while ensuring that supervision processes remain aligned with principles of social justice and human rights (Canton, 2024; Smith & Vanstone, 2002). In this regard, probation practice increasingly reflects the historical roots of social work as a profession concerned with social integration, welfare protection, and the reduction of structural inequalities (Payne, 2020).

One of the most important implications for practice concerns the development of culturally competent interventions. Migration has transformed the demographic composition of many societies, requiring social workers and probation officers to engage with individuals from diverse cultural, linguistic, and socio-economic backgrounds. Effective practice therefore depends on professionals' ability to understand cultural norms, communication styles, and migration experiences that shape clients' interactions with legal institutions (Cheetham, 2022; Williams & Graham, 2014). Intercultural competence has been

identified as a crucial professional skill within probation services, particularly when working with migrant clients who may have limited familiarity with host-country legal systems or social service structures (Ghanem, 2018).

From a social work perspective, culturally responsive practice must also be grounded in an ecological understanding of migrants' social environments. Research examining immigrant social work practice highlights the importance of recognizing both the strengths and challenges associated with migration experiences, including resilience, community networks, and cultural identity (Lin et al., 2018). At the same time, migrants frequently encounter structural barriers related to employment, housing, and social protection systems, which may complicate their reintegration processes during probation supervision (Di Rosa et al., 2012). These structural inequalities require social workers to adopt advocacy-oriented approaches that address both individual and systemic dimensions of vulnerability.

Another critical dimension concerns the ethical and emotional challenges faced by practitioners working with migrant populations involved in criminal justice systems. Studies on social workers supporting immigrant families indicate that professionals often experience moral distress when institutional resources are insufficient to address the complex needs of vulnerable clients (Olcoń & Gulbas, 2021). Similar challenges arise in probation practice, where practitioners must balance supervisory responsibilities with ethical commitments to client well-being and social justice. Supporting migrant families affected by legal problems or juvenile delinquency further illustrates the importance of family-centered interventions capable of addressing broader relational dynamics (Yakhnich & Teichman, 2015).

The strengthening of institutional coordination represents another key implication for practice and policy. Probation services rarely operate in isolation; instead, they function within broader institutional networks that include migration authorities, social welfare agencies, non-governmental organizations, and community-based service providers. Integrated case management approaches are therefore essential for addressing practical needs related to housing, employment, legal assistance, and psychosocial support. Best practice models for working with refugees and migrants emphasize the importance of interdisciplinary collaboration and coordinated service delivery systems that prevent fragmentation of support services (Potocky, 2002; Chang-Muy & Congress, 2023).

Institutional collaboration also requires attention to the organizational culture of probation services themselves. Research examining the

professional environment of probation institutions highlights how structural reforms, privatization processes, and managerial reforms have reshaped occupational cultures within the field (Burke et al., 2017; Kirton & Guillaume, 2019). These transformations influence professional identities, decision-making practices, and the balance between surveillance and support within probation work. Understanding these institutional dynamics is essential for developing policies that reinforce the rehabilitative and social work dimensions of probation services (Robinson et al., 2016).

The quality of probation supervision remains a central factor in determining the effectiveness of rehabilitative interventions. Studies examining probation supervision practices emphasize the importance of professional skills such as communication, empathy, and motivational engagement in promoting behavioral change among individuals under supervision (Raynor & Vanstone, 2016; Shapland et al., 2012). These competencies are particularly important when working with migrants who may experience distrust toward institutions or unfamiliarity with legal procedures.

Policy development must also consider the broader sociological context within which probation services operate. Social work and probation professionals' function within social systems shaped by structural inequalities, institutional hierarchies, and political priorities. Sociological perspectives emphasize the importance of understanding how social structures influence individual behavior and institutional responses within criminal justice contexts (Cree, 2010). In this regard, policy frameworks should aim to reduce structural barriers and promote inclusive social policies that support reintegration rather than reinforce marginalization.

Human rights-based approaches provide an important normative framework for guiding policy reforms related to migrants within probation systems. Social work practice grounded in human rights principles emphasizes dignity, participation, and equal access to justice for all individuals, regardless of migration status (Androff & Mathis, 2022). Integrating these principles into probation policies can help ensure that supervision practices remain consistent with broader commitments to social justice and legal fairness.

In addition, policymakers must address the risks of stigmatization associated with criminal justice involvement. Research examining perceptions of stigma within criminal justice contexts highlights how marginalized groups, including migrants and individuals with mental health needs, may experience compounded forms of social exclusion when interacting with legal institutions (Afyonoğlu et al., 2025). Policies that prioritize restorative approaches and community-based

rehabilitation programs can help mitigate these stigmatizing effects by emphasizing reintegration rather than punishment.

Legal frameworks also play a fundamental role in shaping probation practices and their implications for migrants. Legal scholarship examining criminal investigations, national security offenses, and administrative procedures emphasizes the importance of safeguarding fundamental rights throughout judicial processes (Apachiței, 2024; Apachiței, 2025). Ensuring procedural fairness and proportionality within legal systems is particularly important when migrants interact with criminal justice institutions, as overlapping legal regimes related to immigration and criminal law may create complex regulatory environments (Apachiței & Sîrcu, 2023; Mățã et al., 2025).

The intersection between criminal justice and social policy can also be observed in areas where social problems become criminalized. The legal regulation of domestic violence provides an example of how criminal justice systems increasingly interact with social work interventions designed to protect vulnerable individuals and support family stability (Danis, 2003). These intersections illustrate the need for policies that integrate legal accountability with social support mechanisms capable of addressing underlying social issues.

European policy developments have further influenced the institutional context in which social work and probation services operate. Reforms in welfare governance and criminal justice policies have reshaped professional responsibilities and institutional priorities across many European countries (Lorenz, 2017). As a result, probation services must continuously adapt their practices in response to evolving social challenges, including migration flows and demographic changes.

Finally, research examining the profile of migrants under probation supervision indicates that migration-related mobility and socio-economic conditions may shape patterns of supervision and reintegration (Ilie, 2024). These findings highlight the importance of policy frameworks capable of addressing the specific needs of migrant populations while maintaining equitable and effective probation practices.

In conclusion, the integration of restorative psychosocial interventions within probation systems has significant implications for both professional practice and public policy. Effective responses to the challenges associated with migration and criminal justice require culturally competent practice, strong institutional collaboration, and policy frameworks grounded in human rights and social justice principles. By combining legal supervision with psychosocial support and community engagement strategies, probation systems can

contribute to more inclusive and rehabilitative justice models that promote social cohesion and human dignity.

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SOCIO-EDUCATIONAL APPROACHES FOR VULNERABLE GROUPS: RURAL CHILDREN AND OLDER ADULTS

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Abstract: *Vulnerability among rural children and older adults in residential care represents a multidimensional challenge shaped by structural inequality, limited access to services, and weakened community cohesion. Addressing these issues requires integrated socio-educational approaches that combine educational policy, social work interventions, and community-based strategies. This paper explores the socio-educational dimensions of vulnerability by examining the structural conditions affecting rural childhood and institutionalized aging, as well as the role of interdisciplinary collaboration in mitigating these challenges. The study analyzes intervention models that include non-formal education programs, mentoring initiatives, intergenerational activities, cognitive stimulation for older adults, and community regeneration strategies in rural contexts. Particular attention is given to the importance of coordinated institutional responses, trauma-informed and restorative frameworks, and inclusive educational practices that support participation and well-being across the life course. The findings highlight the need for integrated public policies that strengthen cross-sector collaboration between education, social services, and local governance in order to promote sustainable social inclusion. By linking educational innovation with community development and psychosocial support, socio-educational interventions can contribute to reducing inequalities and enhancing resilience among vulnerable populations.*

Keywords: *vulnerability; rural children; residential elder care; socio-educational interventions; social inclusion.*

Vulnerability and social inequality in rural childhood and residential elder care

Vulnerability is best understood not as a fixed attribute of particular individuals, but as a socially produced condition emerging from unequal access to protection, resources, participation, and recognition. In this sense, vulnerability reflects the interaction between personal needs and broader institutional, economic, and territorial arrangements that shape life chances across the lifespan (Fineman, 2012; Ranci, 2010). For both rural children and older adults in residential care, disadvantage is rarely the result of a single risk factor. Rather, it develops through cumulative exposures to social inequality, limited services, fragile support networks, and restricted opportunities for meaningful inclusion. A socio-educational analysis of these groups therefore requires attention to the structural conditions that make some individuals more dependent on institutional responsiveness than others. In the case of children growing up in rural environments, vulnerability is closely tied to territorial inequity. Rural residence often coincides with reduced access to educational infrastructure, fewer specialized services, transportation barriers, and lower institutional density, all of which affect children's developmental pathways and educational opportunities (Leight, 2003; Mayer et al., 2005). Research on vulnerability in child development has shown that social inequities influence children not only through material deprivation, but also through the diminished availability of stimulating environments, stable support systems, and early developmental opportunities (da Silva et al., 2015). Rural children may thus be exposed to forms of cumulative disadvantage in which educational inequality overlaps with family precarity, service scarcity, and community depopulation.

Educational inequality is one of the clearest manifestations of this structural vulnerability. Studies on rural–urban disparities consistently show that children in rural areas face lower access to quality schooling, fewer extracurricular and enrichment opportunities, and more limited pathways for academic progression than their urban peers (Zhang et al., 2015). These inequalities are not only logistical or geographic; they are also social, insofar as they reflect broader patterns of stratification that shape aspirations, educational resources, and participation. Romanian educational research similarly points to the importance of inclusive assessment, cognitive development, and school participation as key dimensions for understanding how structural disadvantages become visible in educational trajectories (Colareza et al., 2026; Certini et al., 2025). When educational institutions are weakly connected to community realities, rural children are at greater risk of disengagement, reduced achievement, and long-term exclusion.

This rural vulnerability must also be interpreted in relation to ongoing demographic and social transformations. Rural depopulation, driven in part by labor migration, weakens community cohesion, alters family structures, and reduces local institutional capacity. In migrant-sending areas, children may grow up in environments marked by parental absence, disrupted caregiving, and the erosion of everyday social support systems that would otherwise sustain development and educational continuity (Goldschmidt & Rad, 2025). At the community level, depopulation affects schools, local public services, and intergenerational solidarity, producing a social ecology in which children's vulnerability is intensified by institutional fragility (Goldschmidt & Rad, 2026). In such contexts, social inequality becomes embedded in place itself, making rural childhood a condition shaped not only by household disadvantage but also by the weakening of collective structures of care.

At the same time, rurality should not be equated exclusively with deficit. Educational scholarship has highlighted the potential of rural and non-formal contexts to support participation, experiential learning, and value formation when institutions are able to mobilize local resources meaningfully. Outdoor education, for example, has been associated with enhanced pupil involvement in social life, greater active participation, and alternative pathways for engagement beyond formal classroom routines (Torkos & Egerau, 2020a). Similarly, non-formal and innovative educational practices may help counterbalance some of the rigidity and resource constraints of traditional teaching models, especially when they are adapted to local community conditions (Coşarbă & Torkos, 2024; Roman et al., 2025). Yet these potentials do not erase structural inequality; rather, they reveal that rural vulnerability can be mitigated when educational environments become flexible, context-sensitive, and participatory.

A parallel, though distinct, configuration of vulnerability characterizes older adults in residential care. Aging has increasingly been theorized as a condition of vulnerability not because older adults are inherently passive or dependent, but because aging bodies and biographies become more exposed to the quality of social arrangements, institutional care, and relational support (Fineman, 2012). In residential settings, this dependence on institutional responsiveness becomes particularly visible. Older adults may face loneliness, reduced autonomy, health decline, cognitive fragility, and a shrinking network of reciprocal social relations. Ethical analyses of aged care therefore emphasize that vulnerability in later life is both existential and socially mediated, shaped by how care institutions recognize dignity, agency, and personhood (Sanchini et al., 2022).

The literature on old-age vulnerability further suggests that later-life disadvantage is multidimensional, involving material insecurity, health limitations, weak family support, and social isolation. Schröder-Butterfill and Marianti (2006) propose that vulnerability in old age emerges where exposure to threats is not matched by access to adequate coping resources. This framework is highly relevant for residential care, where institutional protection may coexist with emotional loss, dependency, and diminished control over everyday life. Older adults may be physically safer within care facilities while simultaneously experiencing relational impoverishment, role loss, and reduced opportunities for social participation. Residential care, in this sense, does not eliminate vulnerability; it reorganizes it within an institutional environment.

These dynamics become even more pronounced when older adults come from rural or high-vulnerability contexts. Studies comparing elderly caregivers across urban, rural, and highly vulnerable environments show that social context significantly shapes the burdens, needs, and support resources available in later life (Pavarini et al., 2017). Likewise, analyses of aging in rural communities underline that older people often inhabit “vulnerable places,” where limited services, social isolation, and territorial marginalization compound the challenges of aging itself (Joseph & Cloutier-Fisher, 2004). When such individuals transition into residential care, they may carry with them a history of accumulated disadvantage, including poverty, fragile health trajectories, and disrupted social ties. Their institutional needs are therefore not merely medical, but socio-educational and relational.

Health and care inequalities further deepen these vulnerabilities. Systematic reviews on vulnerable populations in rural societies show that rural residence is associated with greater unmet health and care needs, lower service accessibility, and broader exposure to social determinants of poor well-being (Gonzalez et al., 2018a; Gonzalez et al., 2018b). These patterns are especially relevant for older adults, whose quality of life depends heavily on continuity of care, psychosocial stimulation, and the maintenance of social bonds. In residential settings, well-being cannot be reduced to physical care alone. Evidence-based psychosocial therapies have been shown to support active aging, emotional balance, and improved quality of life among older adults in care facilities, indicating that vulnerability in institutional contexts must be addressed through more than custodial care models (Gheorghiu & Rad, 2025).

From a socio-educational perspective, the experiences of rural children and older adults in residential care reveal a common pattern: both groups are highly dependent on the quality of institutional mediation

between vulnerability and inclusion. Children rely on schools, families, and communities to transform structural disadvantage into opportunities for participation and development. Older adults rely on care institutions and professional support systems to protect dignity, autonomy, and relational continuity in the face of age-related dependency. In both cases, vulnerability is intensified when institutions respond narrowly, treating needs as isolated deficits rather than as outcomes of broader social inequality.

This observation also invites a wider interdisciplinary reading. Social work and allied professions increasingly operate in environments marked by technological change, ethical uncertainty, and shifting forms of agency. Recent work on agency and institutional participation shows that empowerment depends not only on access to tools or services, but also on whether individuals are positioned as active participants rather than passive recipients of intervention (Rad et al., 2026; Runcan et al., 2026). Although these studies address educational and digital contexts, their implications are broader: vulnerability is reduced when institutional systems enable voice, participation, and ethically grounded support. The same principle applies to rural childhood and residential elder care, where inclusion depends on whether vulnerable persons are recognized as relational, capable subjects within educational and care environments.

Finally, vulnerability should not be framed only as exposure to harm, but also as a call for organized social responsibility. Trauma-informed and restorative perspectives in social work argue that effective responses to vulnerability require ethical grounding, interdisciplinary collaboration, and attention to both suffering and resilience (Runcan et al., 2025; Vlaj & Rad, 2025). Although developed in partly different applied fields, these frameworks are relevant here because they shift the focus from managing fragile populations to designing responsive systems of care, participation, and recovery. For rural children and older adults in residential care, social inequality becomes most damaging when institutions fail to create these conditions. Conversely, socio-educational responses become meaningful when they treat vulnerability as relational, contextual, and transformable.

Thus, the vulnerability of rural children and older adults in residential care should be understood as the result of intersecting inequalities shaped by place, age, institutional quality, and social belonging. Rural childhood is marked by territorial disparities, educational precarity, and the social consequences of migration and depopulation. Residential elder care is marked by dependency, relational loss, and the ethical challenge of sustaining dignity within institutional life. In both cases, vulnerability is neither accidental nor purely individual. It is socially

distributed, institutionally mediated, and therefore open to intervention through coherent socio-educational strategies.

The role of social work and education in supporting vulnerable populations

The support of vulnerable populations requires more than the coexistence of welfare and schooling systems; it depends on the creation of integrated socio-educational environments capable of responding to developmental, emotional, relational, and structural needs. For rural children and older adults in residential care, vulnerability is rarely reducible to one domain alone. Educational disadvantage, social isolation, unmet health needs, weak institutional access, and reduced participation tend to intersect, which makes fragmented intervention insufficient. In this context, the relationship between social work and education becomes especially important, because both fields address not only individual difficulties but also the conditions that allow people to participate, learn, and remain connected to supportive communities (Ranci, 2010; Fineman, 2012).

Social work contributes to this effort by translating vulnerability into coordinated support, advocacy, and relational care. Rather than treating beneficiaries as passive recipients of services, contemporary social work increasingly emphasizes person-centered, context-sensitive, and interdisciplinary responses that connect material needs with psychosocial development and social participation (Runcan et al., 2025). This orientation is particularly relevant for groups exposed to cumulative disadvantage. Rural children may require educational continuity, emotional support, family mediation, and community-based opportunities for engagement, while older adults in residential care may need interventions that preserve dignity, autonomy, emotional balance, and meaningful participation in everyday life (Gheorghiu & Rad, 2025). In both cases, the role of social work is not secondary to education, but complementary and often foundational, because educational inclusion depends on the broader ecology of care and support surrounding the individual.

Education, in turn, is not limited to formal instruction. It includes all those structured and semi-structured processes through which individuals acquire competencies, develop agency, and remain socially engaged. This broader understanding is crucial when working with vulnerable populations. For children, educational support involves not only curriculum delivery, but also participation, belonging, developmental monitoring, and the cultivation of cognitive and socio-emotional competences. For older adults, educational processes may take the form of cognitive stimulation, social learning,

intergenerational dialogue, therapeutic participation, or activities that support active aging and preserve functional autonomy (Gheorghiu & Rad, 2025). A socio-educational framework therefore understands education as a lifelong resource for resilience, adaptation, and inclusion.

In the case of rural children, the interaction between education and social work is especially significant because school participation is strongly conditioned by social context. Research on school participation in disadvantaged territories shows that attendance and engagement are influenced not only by school-level factors, but also by family instability, community resources, and the degree to which educational systems are responsive to local inequalities (Certini et al., 2025). Educational inequality between rural and urban areas further confirms that structural differences in access, resources, and opportunity shape children's trajectories from early stages onward (Zhang et al., 2015). Under such conditions, schools cannot respond effectively in isolation. Social workers, psychologists, educators, and community actors must work together to reduce the effects of territorial disadvantage and create pathways for sustained participation.

This is why interdisciplinary practice becomes central. Educational professionals bring expertise in pedagogy, assessment, learning progression, and classroom inclusion, while social workers contribute ecological assessment, family-centered intervention, resource coordination, and a stronger sensitivity to structural vulnerabilities. Psychologists add knowledge related to emotional regulation, developmental needs, coping, and mental well-being. When these roles are integrated, support programs can move beyond remediation toward more coherent developmental intervention. Work on cognitive education and innovative assessment in primary school, for example, shows that inclusion requires educational practices capable of recognizing learning progression, diversity of needs, and broader systemic challenges affecting school performance (Colareza et al., 2026). Such educational innovations are especially relevant in vulnerable settings where standardized responses often fail to capture the realities of children's learning contexts.

The whole school perspective is particularly useful in this regard. A whole school approach emphasizes that participation, learning, and well-being are produced collectively through relationships among students, teachers, families, and community institutions rather than within classrooms alone. In contexts marked by rural inequality and migration-related disruptions, this perspective helps explain why children's educational outcomes depend on broader patterns of social cohesion and institutional collaboration (Certini et al., 2025;

Goldschmidt & Rad, 2026). Where communities are weakened by depopulation, parental migration, or declining public trust, schools may become one of the few remaining infrastructures of stability. Their capacity to collaborate with social services is therefore not optional but essential.

The rural community context also matters because social work and education operate within places shaped by demographic and institutional change. In migrant-sending villages, family fragmentation, reduced adult presence, and weakened local institutions may undermine both educational continuity and children's everyday support systems (Goldschmidt & Rad, 2025). Rebuilding community cohesion in such settings is not only a matter of public policy; it directly affects the effectiveness of educational and social interventions. When local institutions cooperate and community ties remain active, vulnerable children are more likely to benefit from coordinated forms of care, supervision, and participation (Goldschmidt & Rad, 2026). Thus, socio-educational work in rural areas must also be community work.

Educational practice itself must become more flexible and socially responsive in order to support vulnerable populations. Research on contemporary educational innovation argues that meaningful learning increasingly depends on adaptive, participatory, and context-sensitive approaches rather than rigid transmission models (Roman et al., 2025). This is highly relevant for children exposed to structural disadvantage, who may benefit more from educational environments that incorporate non-formal learning, experiential methods, and diverse forms of engagement. Outdoor education has shown positive effects on pupils' involvement in social life, suggesting that alternative pedagogical settings can strengthen participation and social integration (Torkos & Egerau, 2020a). Similarly, the use of informational technologies in outdoor educational activities demonstrates that innovative formats can expand access and engagement even in difficult or atypical circumstances (Torkos & Egerau, 2020b).

These approaches are not merely methodological alternatives; they also reshape how vulnerable children are positioned within education. Non-formal activities and innovative teaching strategies can foster inclusion by allowing pupils to experience competence, cooperation, and belonging outside the narrow framework of academic performance (Coşarbă & Torkos, 2024). In this sense, socio-educational intervention is not only about compensating for deficits, but also about creating contexts in which vulnerable children can participate successfully and be recognized as capable social actors. Risk management in outdoor learning further shows that such educational experiences require structured planning, safety awareness, and professional competence,

especially when implemented with children in sensitive contexts (Torkos, 2018).

Intercultural education is another important dimension of support, even when the groups under discussion are rural children and older adults rather than explicitly migrant students. Vulnerability often involves social distance, symbolic exclusion, and limited exposure to diversity. Educational work that promotes intercultural values contributes to future-oriented inclusion by encouraging openness, mutual respect, and social belonging (Torkos & Egerău, 2022). In rural areas affected by migration or social change, such educational orientations may help children navigate more complex social realities while also strengthening community resilience.

Teacher preparation also has a decisive role in determining whether educational institutions can respond effectively to vulnerability. New directions in teacher training emphasize the need for professionals who are not only pedagogically competent, but also able to address inclusion, developmental diversity, and emerging social challenges in early childhood and primary education (Balas & Torkos, 2025). This is particularly important in rural and under-resourced settings, where teachers are often among the first professionals to identify vulnerability, disengagement, or developmental difficulties. When teacher training remains disconnected from the realities of social inequality, schools are less able to function as protective environments. The same socio-educational logic applies, with necessary differences, to older adults in residential care. Although they are not usually associated with education in the narrow sense, residential elder care involves continuous processes of adaptation, communication, emotional regulation, and cognitive engagement. The role of social work here includes case management, psychosocial support, family mediation, safeguarding dignity, and facilitating participation in meaningful daily activities. Education, broadly understood, contributes through stimulation programs, therapeutic activities, health literacy, intergenerational interaction, and opportunities for maintaining or relearning skills that support autonomy and quality of life (Gheorghiu & Rad, 2025). Supportive practice in residential settings therefore depends on the convergence of care, pedagogy, and psychosocial intervention.

This convergence is justified by the nature of vulnerability in older age. Ethical scholarship on aged care emphasizes that vulnerability in later life is shaped by dependency, frailty, institutionalization, and reduced access to relational reciprocity, which makes the quality of care environments critically important (Sanchini et al., 2022). Frameworks for understanding old-age vulnerabilities similarly underline that

exposure to decline becomes harmful when coping resources, social support, and institutional responsiveness are insufficient (Schröder-Butterfill & Marianti, 2006). Social work and educationally informed psychosocial practice respond precisely at this point: they do not eliminate aging-related challenges, but they can enhance adaptive capacity, preserve meaning, and reduce the social consequences of dependency.

The broader health and care literature reinforces this need for integration. Rural and socially vulnerable populations experience disproportionate unmet needs in access to health and support services, which means that educational and psychosocial interventions often function as indirect protective mechanisms against deeper exclusion (Leight, 2003; Mayer et al., 2005; Gonzalez et al., 2018a; Gonzalez et al., 2018b). Studies on older adults living in rural or high-vulnerability contexts further show that later-life well-being is inseparable from the social conditions in which care is provided and relationships are maintained (Pavarini et al., 2017; Joseph & Cloutier-Fisher, 2004). Residential care institutions therefore need more than medical routines; they need socio-educational climates that foster interaction, stimulation, continuity, and trust.

An additional lesson comes from work with other highly vulnerable groups. Research on trauma-informed interventions in social work emphasizes that effective support must be ethically grounded, relationally sensitive, and interdisciplinary, particularly when beneficiaries have experienced dislocation, loss, or prolonged stress (Runca et al., 2025). Reviews of psychosocial interventions in immigration detention and custody centers further demonstrate that resilience is strengthened when support systems address both emotional suffering and structural vulnerability rather than focusing only on immediate control or protection needs (Pirvu & Rad, 2025). Although these studies concern different populations, their implications are transferable: vulnerable persons benefit most when institutions integrate care, participation, and recovery-oriented support. The restorative dimension of social work also adds value to socio-educational practice. Restorative frameworks stress relationship-building, accountability, participation, and reintegration rather than simple management of problems. While often discussed in criminal justice contexts, restorative principles are equally relevant to educational and care settings because they encourage dialogue, shared responsibility, and the repair of relational disconnection (Vlai & Rad, 2025). In schools serving vulnerable children and in residential institutions caring for older adults, these principles can inform

professional practice by shifting attention from compliance and containment toward inclusion, dignity, and collaborative support.

The role of social work and education must now be considered in relation to changing technological and ethical environments. Recent studies on digital agency and attitudes toward artificial intelligence in education show that empowerment is linked not only to access to innovation, but also to ethical mediation, perceived control, and the ability to use tools meaningfully within supportive learning contexts (Rad et al., 2026; Runcan et al., 2026). Although these studies address educational technology, they point to a broader principle highly relevant here: vulnerable populations require not simply services, but guided, ethically informed participation in environments that can otherwise reproduce exclusion. The same is true of rural schools and residential care institutions. Their effectiveness depends on whether professionals are able to create inclusive settings in which people learn, adapt, and remain socially connected rather than merely being managed.

Socio-educational intervention models for rural children and older adults

If vulnerability is socially produced, intervention must also be socially organized. For rural children and older adults in residential care, effective support cannot rely on isolated services or one-dimensional programs. It requires socio-educational models that connect learning, care, participation, and community life in ways that respond to structural inequality while strengthening individual and collective capacities. Such models are especially important for vulnerable populations because disadvantage often persists not through a lack of formal eligibility for support, but through fragmented access, weak institutional coordination, and the absence of meaningful opportunities for engagement (Ranci, 2010; Fineman, 2012). Socio-educational interventions therefore become most effective when they are relational, place-sensitive, and developmentally appropriate.

For rural children, one important intervention model is non-formal and experiential education. In contexts where formal schooling may be constrained by limited resources, rigid routines, or low engagement, non-formal educational approaches can provide alternative pathways for participation and learning. These approaches often include project-based work, group activities, creative workshops, outdoor learning, and community-based initiatives that strengthen both social competence and motivation. Research on outdoor education has shown that it can increase pupils' successful involvement in social life by encouraging active participation, cooperation, and direct engagement with the

learning environment (Torkos & Egerau, 2020a). Such models are particularly valuable for children in rural communities, where local space itself may become a pedagogical resource when schools and educators are prepared to work beyond strictly classroom-based formats.

Outdoor and non-formal education also support inclusion by expanding the range of contexts in which competence can be experienced. Children who do not thrive in conventional instructional settings may respond more positively to participatory and experiential forms of learning that make room for collaboration, exploration, and embodied engagement. The transformation of traditional teaching methods through outdoor and non-formal activities has been linked to innovation in educational practice and to a broader rethinking of how schools can foster participation and relevance (Coşarbă & Torkos, 2024). At the same time, these models require careful planning, especially when implemented with vulnerable groups. Risk management in outdoor learning is therefore not merely a technical concern, but a core component of responsible socio-educational design (Torkos, 2018).

A second important model involves educational mentoring and whole school participation strategies. In vulnerable rural contexts, school participation is often affected by factors external to instruction itself, including family instability, migration-related disruptions, transportation difficulties, and reduced trust in institutions. Mentoring models can provide continuity, encouragement, and individualized support that help children remain connected to school life despite these pressures. This logic is consistent with the whole school approach, which views participation not as a matter of attendance alone, but as the result of relational and institutional conditions that sustain belonging and engagement (Certini et al., 2025). From this perspective, intervention should include not only academic remediation, but also social support, family-school communication, and coordinated responses to emerging risks of disengagement.

The value of such models is reinforced by research on school functioning among highly vulnerable children in residential child care, which shows that educational outcomes depend heavily on the stability, responsiveness, and coordination of the systems surrounding the child (González-García et al., 2017). Although rural children and children in residential care are distinct groups, both are affected by structural conditions that make school participation more fragile. This suggests that socio-educational intervention models should place greater emphasis on continuity of support, relational security, and

institutional collaboration rather than assuming that classroom exposure alone will generate inclusion.

Innovative pedagogical models also play an increasingly important role. Work on cognitive education and innovative assessment in primary school highlights the need for educational practices that align inclusion with learning progressions and diverse developmental trajectories (Colareza et al., 2026). For vulnerable rural children, this means moving away from deficit-based assumptions and toward models that recognize uneven developmental starting points while still creating pathways for competence and progress. Such an approach is particularly relevant in education systems facing wider performance and equity challenges, because it reframes support not as compensation for failure, but as a structured opportunity for participation and growth. Digital and technologically mediated learning models may also become part of the intervention landscape, provided they are implemented ethically and inclusively. Research on digital agency and students' engagement with artificial intelligence in education suggests that participation in innovative learning environments depends on perceived control, ethical guidance, and supportive mediation rather than mere access to tools (Rad et al., 2026; Runcan et al., 2026). In rural contexts, where educational inequalities may be exacerbated by infrastructural limitations, digital inclusion strategies must therefore be carefully designed so that they do not reproduce exclusion under the guise of modernization. The use of informational technologies in outdoor and alternative educational activities illustrates that technology can enhance learning flexibility when it is integrated pedagogically rather than imposed instrumentally (Torkos & Egerau, 2020b).

Intercultural and value-oriented educational models add another useful dimension. Even in rural settings that appear socially homogeneous, children are increasingly growing up in contexts shaped by migration, mobility, and cultural change. Educational activities that promote intercultural values, social openness, and future-oriented citizenship can strengthen children's ability to relate constructively to difference and change (Torkos & Egerău, 2022). Such models are not peripheral; they contribute to the long-term social resilience of rural communities by preparing children for participation in wider and more diverse social worlds.

At the community level, development-oriented interventions are also essential. Rural children's educational well-being depends not only on school practices but also on whether the wider community can sustain institutions of trust, participation, and support. In migrant-sending villages, the weakening of community cohesion undermines children's everyday developmental environments by eroding local support

structures and reducing collective capacity for care (Goldschmidt & Rad, 2025). Community-based socio-educational models therefore need to involve more than teachers and families; they should include local authorities, civil society actors, and social service providers working together to rebuild environments in which children can participate meaningfully. The theory-of-change model proposed for depopulating rural Romania is particularly useful here because it frames social recovery as a cumulative process in which education, local governance, social work, and community participation reinforce one another (Goldschmidt & Rad, 2026).

For older adults in residential care, socio-educational intervention models take different but equally important forms. One major category is psychosocial and cognitive stimulation programming. Such interventions aim to preserve cognitive functioning, enhance emotional well-being, reduce isolation, and maintain a sense of meaning and participation in everyday life. Evidence-based psychosocial therapies for older adults in care facilities have been associated with improved well-being and more active aging, suggesting that residential institutions should not be limited to custodial care, but should function as environments of continuing development and social engagement (Gheorghiu & Rad, 2025). Cognitive stimulation, structured conversation, reminiscence activities, therapeutic groups, and creative expression programs can all contribute to a more active and humane institutional life.

These interventions are especially important because vulnerability in old age is not only medical. Ethical analyses of aged care emphasize that older adults in institutional settings remain highly sensitive to the quality of relational, moral, and social environments in which care is delivered (Sanchini et al., 2022). Models of support must therefore address loneliness, dependency, and relational loss alongside physical care needs. Theoretical frameworks of old-age vulnerability also suggest that supportive interventions are most effective when they increase access to coping resources, social reciprocity, and institutional responsiveness (Schröder-Butterfill & Marianti, 2006). In practical terms, this means that residential care programs should be designed to foster agency wherever possible, rather than interpreting frailty as a reason for passive containment.

Intergenerational activities represent a particularly promising socio-educational model because they create reciprocal forms of participation between children, youth, and older adults. For rural communities and residential settings alike, intergenerational programs can reduce symbolic separation between age groups while enhancing social learning, emotional exchange, and community belonging. When older

adults are included in educational or community-based projects, they are repositioned from beneficiaries of care to participants in social life. Likewise, children benefit from contact with older generations through the development of empathy, memory work, and social continuity. Such programs can be especially powerful in socially fragmented environments, because they rebuild relational bridges that are often weakened by migration, institutionalization, or demographic change (Goldschmidt & Rad, 2026; Gheorghiu & Rad, 2025).

Another relevant model is trauma-informed socio-educational support. Although rural children and older adults in residential care are not always described explicitly through trauma frameworks, both groups may experience forms of chronic stress, loss, separation, and cumulative adversity. Trauma-informed interventions in social work emphasize ethical grounding, relational safety, interdisciplinary practice, and the importance of recognizing how adversity shapes behavior, participation, and trust (Runcan et al., 2025). Such principles can be integrated into schools, community programs, and care institutions by prioritizing predictable routines, sensitive communication, reflective professional practice, and opportunities for emotional expression. The broader review of trauma and resilience in institutional settings further supports the idea that vulnerable populations benefit when support systems aim not only to manage risk, but to strengthen resilience and adaptive capacity (Pîrvu & Rad, 2025). Restorative and relationship-based intervention models also have important socio-educational value. Although restorative approaches are often associated with criminal justice, their underlying principles, dialogue, accountability, reparation, participation, and reintegration, are equally relevant to vulnerable educational and care settings. Restorative justice-informed social work emphasizes the importance of rebuilding relationships and creating contexts in which individuals are not reduced to problems, but engaged as participants in constructive social processes (Vlai & Rad, 2025). In rural schools, restorative practices may support conflict resolution, participation, and belonging. In residential care, they may strengthen communication, dignity, and collective life by encouraging more inclusive and respectful forms of interaction.

The quality of intervention also depends on professional preparation. New directions in teacher training suggest that early childhood and primary education require professionals capable of responding to inclusion, diversity, and changing social realities with flexibility and competence (Balas & Torkos, 2025). This is crucial for rural areas, where teachers often function as key agents of early identification, support, and community mediation. Likewise, socio-educational

interventions for older adults require staff trained not only in care routines, but also in psychosocial facilitation, communication, and active aging approaches (Gheorghiu & Rad, 2025). Effective intervention models are therefore inseparable from professional development.

Finally, socio-educational intervention models must be evaluated against the broader context of social inequality and unmet need. Rural vulnerability is consistently associated with reduced access to health, care, and developmental resources (Leight, 2003; Mayer et al., 2005; Gonzalez et al., 2018a; Gonzalez et al., 2018b). Child development is shaped by social inequities from early on (da Silva et al., 2015), while older adults in rural or highly vulnerable environments face context-specific burdens that influence how support must be organized (Pavarini et al., 2017; Joseph & Cloutier-Fisher, 2004). This means that intervention models cannot be generic. They must be adapted to territorial realities, institutional capacity, and the lived experiences of beneficiaries.

Socio-educational intervention models for rural children and older adults are most effective when they combine pedagogical innovation, psychosocial support, community participation, and institutional coordination. Non-formal education, mentoring, whole school participation strategies, community development, cognitive stimulation, intergenerational programming, trauma-informed support, and restorative practice each offer important resources for addressing vulnerability. Their common strength lies in the fact that they do not isolate educational or care needs from the social environments in which they emerge. Instead, they treat vulnerability as a relational condition and intervention as a collaborative, developmental, and ethically grounded process.

Policy implications and community-based strategies for social inclusion

The preceding analysis suggests that vulnerability among rural children and older adults in residential care cannot be adequately addressed through isolated interventions or sector-specific responses. When disadvantage is produced through the interaction of territorial inequality, institutional fragility, unmet developmental needs, and weakened social bonds, policy responses must be equally integrated. Social inclusion, in this sense, is not achieved simply by expanding access to services in a formal sense. It requires public policies and institutional practices capable of linking education, social work, health-related support, and community development into coherent systems of care and participation (Ranci, 2010; Fineman, 2012). The policy

challenge is therefore twofold: to reduce structural inequalities that generate vulnerability and to strengthen local institutional capacity to respond in relational, preventive, and sustainable ways.

A first implication concerns the need for integrated social services in territorially vulnerable environments. Rural inequality is often sustained by fragmented infrastructures of support, where education, health, and social protection operate in parallel rather than in coordination. Research on vulnerable populations in rural settings shows that unmet need is shaped not only by personal circumstances, but by geographic isolation, limited institutional density, and restricted access to specialized services (Leight, 2003; Mayer et al., 2005; Gonzalez et al., 2018a; Gonzalez et al., 2018b). For children, this means that school disadvantage is often inseparable from family precarity, transportation barriers, and limited psychosocial support. For older adults, especially those moving into or living within residential care, it means that health, social isolation, and dependency must be addressed together rather than through compartmentalized care routines (Joseph & Cloutier-Fisher, 2004; Pavarini et al., 2017). Policy frameworks should therefore prioritize integrated case coordination and place-based service design rather than assuming that institutional specialization alone ensures effectiveness.

This logic is especially important in rural communities affected by migration and depopulation. Where out-migration reduces adult presence, weakens care networks, and destabilizes local institutions, public policy must move beyond compensatory service delivery and toward community regeneration. Evidence from rural Romania indicates that migration affects community cohesion by eroding trust, intergenerational continuity, and everyday support structures that sustain both children's development and the social well-being of older adults (Goldschmidt & Rad, 2025). A policy response that focuses only on the individual beneficiary risks missing the broader ecology of exclusion. By contrast, theory-of-change approaches centered on rebuilding community cohesion show that social inclusion becomes more viable when education, local government, civil society, and social services act through mutually reinforcing mechanisms (Goldschmidt & Rad, 2026). This suggests that sustainable policy should treat school participation, active aging, and community resilience as interconnected policy domains rather than separate sectors.

A second implication concerns educational policy. Reducing rural inequality requires more than equal curricular provision; it requires differentiated strategies capable of addressing uneven starting points, diverse learning pathways, and structural barriers to participation. Comparative evidence on rural–urban educational disparities

demonstrates that educational inequality is deeply embedded in broader patterns of social stratification and territorial disadvantage (Zhang et al., 2015). National and local educational policies should therefore support flexible, inclusion-oriented learning environments, especially in early childhood and primary education, where vulnerability can either accumulate or be mitigated. The alignment of cognitive education, inclusive assessment, and learning progression is particularly important in this respect, because it allows institutions to recognize developmental diversity without reducing vulnerable children to fixed deficit categories (Colareza et al., 2026).

The policy relevance of school participation is also evident from whole school research, which shows that engagement depends on more than school attendance or instructional delivery. Participation is relational and institutional: it emerges when schools are able to build trust, communicate with families, cooperate with other services, and create meaningful conditions of belonging (Certini et al., 2025). This has direct implications for social inclusion policy. Ministries, inspectorates, and local authorities should support frameworks in which schools function as hubs of coordinated intervention, especially in communities marked by poverty, depopulation, or family instability. Such a perspective would also align with broader calls for teacher preparation that equips educational professionals to respond to complexity, inclusion, and developmental diversity in practice (Balas & Torkos, 2025).

At the level of pedagogical policy, support should be extended to non-formal, community-based, and experiential educational strategies. Innovative educational environments are not merely supplements to formal instruction; they can serve as inclusion mechanisms for children who are otherwise at risk of disengagement. Outdoor education, non-formal learning, and creative participatory methods have all been shown to strengthen social involvement, innovation, and active participation (Torkos & Egerau, 2020a; Coşarbă & Torkos, 2024). However, for such models to become sustainable rather than exceptional, policy must ensure that institutions have the resources, training, and procedural guidance necessary to implement them responsibly. This includes attention to risk management, especially when working with vulnerable children in non-traditional learning environments (Torkos, 2018). In addition, policies promoting intercultural and future-oriented values can contribute to more inclusive educational climates, even in settings not usually framed as multicultural, by preparing children for social worlds shaped by mobility, diversity, and change (Torkos & Egerău, 2022).

A third major implication concerns the governance of residential elder care. Older adults in institutional settings should not be positioned merely as recipients of protection, but as persons whose quality of life depends on the preservation of dignity, agency, and relational belonging. Ethical scholarship on aging emphasizes that vulnerability in later life is not simply the result of biological decline; it is intensified or mitigated by the responsiveness of social arrangements and care institutions (Fineman, 2012; Sanchini et al., 2022). Policy for residential care must therefore move beyond custodial models and explicitly support active aging, psychosocial stimulation, and meaningful participation. This includes investment in evidence-based psychosocial therapies, cognitive stimulation programs, and therapeutic environments that maintain social engagement and emotional well-being (Gheorghiu & Rad, 2025). Such measures are not optional enhancements; they are central to a rights-based understanding of care quality.

The relevance of such policy orientations becomes clearer when viewed through the lens of old-age vulnerability. Frameworks for understanding later-life risk emphasize that exposure to loss, dependency, and declining health becomes especially harmful when individuals lack coping resources, reciprocity, and institutional support (Schröder-Butterfill & Marianti, 2006). Residential institutions must therefore be evaluated not only by the adequacy of physical care, but also by their capacity to provide relational, psychological, and social continuity. For older adults originating from rural or high-vulnerability settings, these needs may be even more pronounced, since past exposures to inequality often shape the conditions under which institutional aging unfolds (Pavarini et al., 2017). Policy should thus integrate social care quality indicators that capture well-being, participation, and emotional life, not only safety and service provision.

A fourth implication concerns the role of trauma-informed and restorative frameworks in public policy and institutional culture. Vulnerable populations often experience not only objective disadvantage, but also repeated forms of dislocation, dependency, invisibility, and loss of control. Trauma-informed approaches in social work emphasize the importance of ethical grounding, relational safety, interdisciplinary cooperation, and the avoidance of institutional practices that reproduce helplessness or exclusion (Runcan et al., 2025). These principles can inform both school and elder care policy by encouraging systems that are predictable, participatory, and sensitive to the emotional realities of beneficiaries. The broader literature on trauma and resilience in institutional settings further supports the need for policies that do not treat vulnerability simply as a

category for control, but as a condition requiring recovery-oriented, resilience-building responses (Pirvu & Rad, 2025).

Restorative principles can complement this orientation by shifting policy emphasis from management to relationship-building. Although developed prominently in justice-related contexts, restorative approaches provide a useful conceptual framework for schools, social services, and residential institutions because they foreground dialogue, accountability, inclusion, and the repair of relational fractures (Vlai & Rad, 2025). In practical terms, restorative policy strategies might include participatory decision-making within institutions, family-inclusive support planning, intergenerational programs, and community forums through which beneficiaries and local actors contribute to social problem-solving. Such approaches are especially relevant in communities where exclusion has become normalized and trust in institutions has eroded.

Community-based strategies are therefore indispensable to social inclusion. The social vulnerability of rural children and older adults is shaped as much by the strength of local relationships and institutions as by the content of specific services. Programs that encourage intergenerational contact, community participation, civic belonging, and shared local responsibility can strengthen both child development environments and the quality of later-life care. When communities are viewed as active social ecosystems rather than passive settings for service delivery, interventions become more sustainable and more likely to generate cumulative effects (Goldschmidt & Rad, 2026). In this sense, community-based policy is not a secondary supplement to institutional action; it is one of the conditions that makes institutional inclusion meaningful.

Contemporary policy must also take seriously the role of innovation and digital mediation. Studies on digital agency and the adoption of artificial intelligence in educational settings show that participation in new systems depends not simply on access, but on ethical design, perceived control, and the quality of institutional guidance (Rad et al., 2026; Runcan et al., 2026). This insight is directly relevant to social inclusion policy. Whether in schools or care institutions, innovation can either reduce or deepen exclusion depending on how it is governed. Policies that promote digitalization without addressing agency, ethics, and support risk reproducing disadvantage under new technological forms. Conversely, digitally supported services and educational innovations can enhance inclusion when they are embedded in human-centered institutional practices and adapted to the needs of vulnerable users.

At a broader level, the policy implications of this analysis point to the need for coherence across social sectors. Rural childhood vulnerability, school participation, active aging, and residential well-being should not be addressed through isolated ministerial logics or short-term project fragmentation. Instead, policy should encourage cross-sector collaboration among education, social work, health, and local governance structures. Such coherence is also necessary because child development is influenced by social inequities from early stages onward (da Silva et al., 2015), while older adults remain dependent on socially organized responsibility for dignity and support in later life (Fineman, 2012). Public policy must therefore acknowledge that inclusion is not the automatic outcome of service presence, but the product of intentional coordination between institutions and communities.

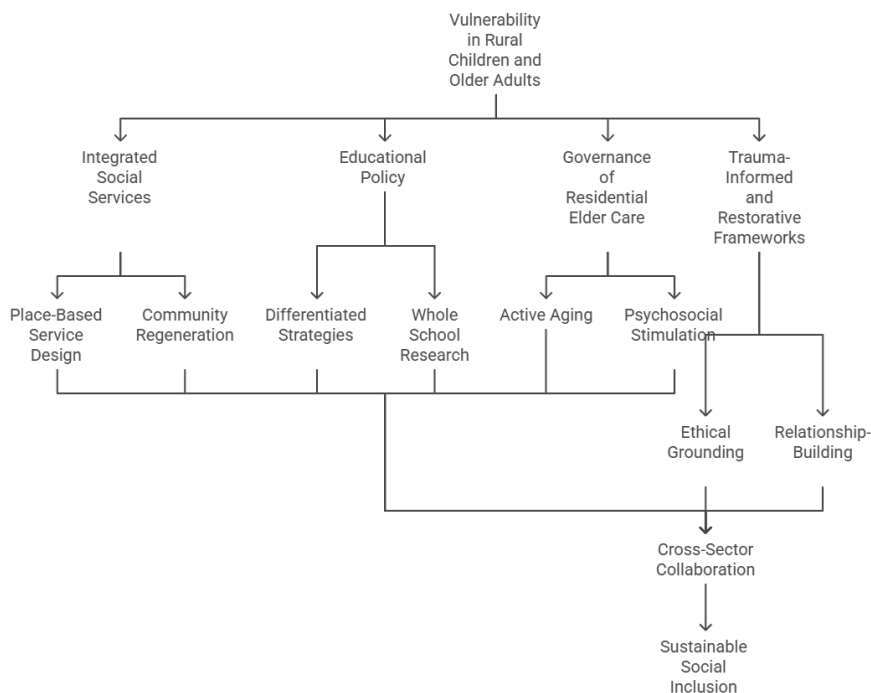


Figure 1. Integrated socio-educational policy framework for addressing vulnerability among rural children and older adults

Figure 1 illustrates the conceptual architecture linking vulnerability in rural children and older adults with key policy and intervention domains. It highlights four major pillars: integrated social services, educational policy responses, governance of residential elder care, and trauma-informed and restorative frameworks. These domains converge through cross-sector collaboration, emphasizing place-based service

design, community regeneration, differentiated educational strategies, whole-school participation, active aging initiatives, and psychosocial stimulation programs. Together, these interconnected mechanisms support ethical grounding, relationship-building, and sustainable pathways toward long-term social inclusion. The framework aligns with recent educational research emphasizing the role of teacher–parent communication, mentoring practices, and innovative pedagogical approaches in strengthening resilience, engagement, and socio-emotional development among vulnerable learners, while supporting inclusive and community-oriented educational environments (Dughi, 2020; Dughi & Bold, 2022; Dughi & Coşarbă, 2025; Dughi et al., 2025).

In conclusion, community-based social inclusion requires a policy architecture capable of linking structural equity with relational care. For rural children, this means reducing territorial educational inequality, strengthening school participation, supporting non-formal and innovative learning, and rebuilding local systems of trust and care. For older adults in residential care, it means promoting active aging, psychosocial well-being, ethical care environments, and opportunities for meaningful participation. Across both groups, the most effective strategies are those that combine integrated services, trauma-informed and restorative principles, educational innovation, and community regeneration. Social inclusion, ultimately, becomes sustainable not when vulnerable groups are merely protected, but when institutions and communities are reorganized so that participation, dignity, and belonging become realistic possibilities in everyday life.

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