AGE DISCRIMINATION IN NIGERIAN PHYSICS EDUCATION: A POLICY AND EQUITY CRITIQUE

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Abstract: *This paper examines age discrimination in physics education in Nigeria, analysing how educational policy impacts participation, equity, and achievement. Guided by Statistical Discrimination Theory, it evaluates how rigid age limits in university admissions marginalise learners regardless of merit, experience, or academic potential. The study highlights that such policies exclude non-traditional learners, late bloomers, and those delayed by socio-economic challenges, thereby reducing diversity essential for innovation in physics education. Drawing from existing literature, it argues for inclusive reforms aligned with lifelong learning and educational justice. Recommendations include eliminating fixed age limits, implementing merit-based and flexible entry pathways, and promoting awareness of age diversity in educational planning. Removing structural age barriers is essential to fostering equity, broadening participation, and enhancing productivity in physics education.*

Keywords: *age discrimination; physics education; lifelong learning; educational policy; Nigeria.*

Introduction: Age restrictions in Nigerian physics education

Age-based restrictions within Nigeria's educational system are pervasive and deeply embedded, shaping access to educational opportunities, employment, scholarships, and professional development across various disciplines, including physics. These restrictions, often framed under the guise of efficiency, merit, and productivity, reflect a longstanding colonial-era mentality that continues to limit the potential of individuals who do not fit within conventional academic and career timelines. Age limits in university admissions, eligibility for scholarships, job placements, and internship opportunities all serve as formidable barriers, particularly for older candidates seeking to enter or re-enter the academic and professional arenas (Nwaka-Nwandu et al., 2024; Amusa, 2020). For instance, undergraduate admission policies typically favor applicants under the

age of 25, while postgraduate scholarships often set age caps at 35, excluding many individuals who might bring valuable experience and motivation to their fields of study (Amusa, 2020; Agbaire & Dunne, 2024).

In the context of physics education, the imposition of these age-based restrictions is particularly detrimental, as it exacerbates an already existing low participation rate in a field crucial to national development and innovation. Physics, often seen as a discipline requiring early specialisation, is subject to both academic and societal assumptions that younger students are better equipped to handle its intellectual rigour. This view perpetuates a cycle of exclusion, where older learners, who may have faced socio-economic, personal, or systemic challenges that delayed their educational journeys, are marginalised in favour of younger, more conventionally educated individuals (Nwaka-Nwandu et al., 2024). Moreover, such age restrictions fail to recognise the increasing global emphasis on lifelong learning and reskilling, which advocates for the continuous development of intellectual and professional skills at all stages of life.

The exclusion of older individuals from educational and professional opportunities not only limits their personal growth but also deprives society of the diverse perspectives and rich experiences they can bring to scientific disciplines like physics. In Nigeria, where education and employment opportunities are already deeply stratified along lines of gender, class, and geography, age-based barriers further entrench existing inequalities, reducing the inclusivity and overall effectiveness of the nation's educational system (Salihu et al., 2016; Agbaire & Dunne, 2024). This paper explores the systemic age-related barriers in physics education in Nigeria, drawing on the concept of Statistical Discrimination Theory to understand how these exclusionary practices are perpetuated within the education system and suggesting pathways for reform to foster a more inclusive, equitable learning environment. Through a theoretical and policy-oriented critique, it aims to highlight the need for a shift in both policy and societal attitudes toward age, encouraging the recognition of the value of learners at all stages of life.

Background and Context: Historical roots and policy drivers of age-based restrictions

The age restrictions entrenched within Nigeria’s educational system are not a recent phenomenon but rather a product of historical influences that continue to shape contemporary policies. The roots of these policies can be traced back to the colonial era, when educational frameworks were designed to support a model of efficiency and early specialization, emphasizing fast-tracked achievement and a narrow,

age-based timeline for academic progression. Under the colonial system, education was often viewed as a means of producing a specific type of labor force, which required individuals to complete their studies within a defined timeframe to quickly enter the workforce and contribute to economic growth. This efficiency-driven model has persisted long after independence, and today's educational system continues to be heavily influenced by this mindset (Nwaka-Nwandu et al., 2024).

In the context of university admissions, particularly for undergraduate programs in physics, the prevailing age restrictions favor younger candidates, typically under the age of 25. This age bracket is often considered optimal for academic progression, as it aligns with the traditional timelines for completing primary, secondary, and tertiary education. However, this policy fails to take into account the many learners who may not follow a conventional path, whether due to socioeconomic constraints, personal circumstances, cultural background, family background or systemic barriers. As a result, older individuals who may have taken time off from formal education due to financial constraints or family obligations, or those seeking to switch careers, are often excluded from higher education opportunities, particularly in fields like physics (Nwaka-Nwandu et al., 2024; Amusa, 2020). Age restrictions are also prevalent when it comes to scholarship eligibility, with many programs setting the maximum age limit at 35 years. This further limits opportunities for mature students who may wish to pursue postgraduate studies in physics or related fields. In a country like Nigeria, where socioeconomic and systemic challenges frequently delay or disrupt an individual's educational journey, age-based barriers create an additional layer of exclusion for non-traditional learners. These policies prevent older individuals from returning to academia, further narrowing the pool of potential students in a field already struggling with low enrollment (Amusa, 2020; Omosewo, 2009).

The impact of these age-related restrictions is particularly severe in disciplines like physics, where access and participation are already limited. Physics education, despite its importance to national development and innovation, is a field where enrollment remains disproportionately low compared to other scientific disciplines (Adolphus, 2019; Omosewo, 2009). This trend is especially evident in a country like Nigeria, where limited resources, lack of infrastructure, and cultural biases create obstacles for students pursuing science education. The imposition of age restrictions exacerbates this issue by narrowing access even further, effectively denying older individuals, who may have gained valuable life or work experience, the opportunity

to contribute to and benefit from the study of physics (Amusa, 2020; Nwaka-Nwandu et al., 2024). The exclusion of older learners from physics programs not only limits access but also undermines the principles of inclusive education. Age-based barriers to education contradict the notion of lifelong learning, which encourages the continuous pursuit of knowledge and personal development at all stages of life. Furthermore, these policies fail to recognize the diverse educational pathways that can lead to success in the sciences. In a rapidly evolving world, where technological progress and scientific innovation are driven by diverse perspectives, it is essential to create educational environments that foster inclusivity and embrace learners of all ages (Nwaka-Nwandu et al., 2024).

In Nigerian universities, the cultural biases surrounding age and education are palpable. Older candidates who may wish to apply to physics programs are often discouraged from doing so, either implicitly through messaging or explicitly through direct disqualification due to age restrictions (Nwaka-Nwandu et al., 2024). This exclusion is not just a matter of policy; it is rooted in broader societal perceptions that associate youth with intellectual potential and capability while linking older age to physical or cognitive decline. These cultural assumptions, when institutionalized in educational policies, create invisible barriers that restrict access and perpetuate ageism within the academic sphere.

In the context of physics education, this form of ageism has broader consequences. Not only does it hinder the personal development of non-traditional learners, but it also diminishes the diversity of thought, experience, and perspective in physics classrooms and research environments. The lack of inclusion of older learners with varied life experiences reduces the overall vibrancy and potential for innovation in scientific fields. Moreover, it denies Nigerian society the benefits of a fully inclusive educational system that can harness the talents and potential of all individuals, regardless of age. The situation is further complicated by Nigeria's broader educational and social inequalities, which are stratified along lines of gender, class, and geography. In this context, age becomes another axis of marginalization, further entrenching systemic exclusion (Nwaka-Nwandu et al., 2024). Those who are already disadvantaged, such as women, rural students, and those from lower-income backgrounds, are disproportionately affected by age-based restrictions (Nwaka-Nwandu et al., 2024; Salihu et al., 2016). This creates an additional barrier for individuals who may have been delayed in their educational pursuits due to economic hardship or familial responsibilities. The intersection of ageism with other forms of inequality deepens the exclusionary nature of the educational system

and reinforces cycles of marginalization (Salihu et al., 2016; Agbaire & Dunne, 2024).

Age restrictions within Nigeria's educational system, particularly in physics education, are not only a reflection of outdated colonial-era policies but also a manifestation of deeper cultural biases that associate age with intellectual decline (Nwaka-Nwandu et al., 2024). These policies limit access to education for non-traditional learners, excluding older individuals who may have valuable experience and motivation to contribute to the field (Amusa, 2020). This exclusionary practice undermines the principles of lifelong learning and inclusive education, perpetuating inequality and reducing the potential for innovation in physics and other scientific disciplines (Omosewo, 2009; Adolphus, 2019). Addressing these barriers requires a shift in both policy and cultural attitudes, recognizing the value of learners at all stages of life and ensuring that education is accessible to all, regardless of age (Nwaka-Nwandu et al., 2024).

Theoretical Framework: Statistical Discrimination Theory

This paper adopts the Statistical Discrimination Theory to understand how age-based exclusions are rationalized within institutional structures. Developed by Kenneth Arrow in 1973, the theory explains how decision-makers often rely on group-level statistics or assumptions when individual information is unavailable or inconvenient to obtain. In the context of education, administrators may assume that younger students are more capable of learning, adapting, and completing rigorous programs like physics, regardless of individual differences. These assumptions, while seemingly efficient, become self-reinforcing biases that disadvantage older applicants (Nwaka-Nwandu et al., 2024). The statistical generalization that "younger is better" leads to systemic practices that favor early academic performance, limit re-entry opportunities, and dismiss the varied competencies of mature learners.

In Nigeria, this manifests in age ceilings for admissions and job placements, and scholarship opportunities that are often justified by institutional goals of productivity, efficiency, and long-term investment (Nwaka-Nwandu et al., 2024; Agbaire & Dunne, 2024). Such logic reflects statistical discrimination in action, where older individuals are seen as less "investable" despite their qualifications or capabilities. As a result, age becomes a proxy for potential, skewing opportunities in favor of the young and excluding others from the academic pipeline, particularly in STEM disciplines like physics (Amusa, 2020; Omosewo, 2009).

Methodological Approach: A conceptual and policy analysis

This paper employs a conceptual and theoretical approach to explore the influence of discriminatory age policies on physics education in Nigeria. Rather than collecting empirical data, the analysis synthesizes existing literature, policy documents, and theoretical perspectives to uncover the underlying mechanisms of exclusion in the educational system. The primary analytical lens is Statistical Discrimination Theory, which provides a framework for understanding how systemic assumptions about age influence policy formation and institutional behavior. The discussion also integrates secondary sources, such as government guidelines, scholarship eligibility criteria, and existing academic research on age and education, to construct a multidimensional critique of how age discrimination operates within the Nigerian context. This method allows for a reflective, policy-oriented critique rooted in theory, enabling the identification of gaps in inclusivity and suggesting pathways for reform. It also emphasizes the importance of interdisciplinary thinking in analyzing educational inequality, drawing from sociology, psychology, education policy, and institutional theory.

Conceptual Discussion: Age discrimination in Nigerian physics education

Systemic policy barriers to physics education access

Physics education in Nigeria, as with many other academic disciplines, is often subject to institutional policies that inadvertently restrict access based on age. The systemic barriers that older individuals face is not always overt but are embedded in the framework of formal education policies (Nwaka-Nwandu et al., 2024; Amusa, 2020). For instance, the imposition of strict age cut-offs for university admission, eligibility requirements for scholarships, and age limits for job placements in the field of physics creates an environment that favors younger individuals, excluding those who might possess the necessary intellectual ability or motivation to succeed in the discipline.

These policies, often articulated as efficiency measures or an attempt to maintain academic standards, reflect deeper biases that assume intellectual capability is inherently tied to youth (Nwaka-Nwandu et al., 2024). The assumptions underlying such policies are not necessarily based on evidence or reflective of actual cognitive performance, but rather cultural stereotypes about the capacity of older individuals to adapt to the fast-paced nature of modern academic life. By preventing older individuals from enrolling in physics programs, Nigeria's education system limits diversity in the classroom, depriving students of varied life experiences and perspectives (Amusa, 2020;

Adolphus, 2019; Omosewo, 2009). This diversity, particularly in a field like physics, is essential for fostering a creative and innovative learning environment that benefits all students, regardless of age.

In addition to academic barriers, policies that impose age restrictions also contribute to a reduction in the diversity of the scientific workforce. Physics, a discipline known for its intellectual rigor and real-world application, benefits from contributions across all age groups. When policies fail to recognize this, they neglect the possibility of lifelong learners, experienced professionals looking to re-skill, or those who might be pursuing physics as a second career (Nwaka-Nwandu et al., 2024). As such, the academic and professional landscape of physics in Nigeria becomes unnecessarily limited, not just for individuals but for society as a whole (Amusa, 2020). This exclusionary framework stands in contrast to international trends where lifelong learning, re-skilling, and continued professional development are becoming increasingly recognized as essential components of modern education systems (Nwaka-Nwandu et al., 2024).

Ageism and perceptions of learner capability in physics

In exploring the role of ageism within the Nigerian educational system, it is crucial to consider how meritocratic language disguises the biases that shape perceptions of ability. The meritocratic rhetoric used in policies related to admissions, funding, and employment in physics often masks deeper, culturally ingrained age biases that associate academic competence with youth (Nwaka-Nwandu et al., 2024). Phrases such as "academic standards," "productivity measures," and "economic efficiency" are commonly used to justify age-based restrictions, yet these terms fail to critically engage with the assumptions about capability that underpin them.

The tendency to equate age with intellectual capacity in the field of physics is rooted in a stereotype that suggests younger individuals are more adaptable, innovative, and intellectually nimble. Such perceptions assume that older individuals cannot match the cognitive flexibility or speed required for academic work in fields like physics. However, these assumptions are often not grounded in empirical evidence and fail to account for the richness of knowledge and experience that older individual bring to their academic and professional endeavors (Nwaka-Nwandu et al., 2024).

Statistical Discrimination Theory provides a useful framework to understand how these biases are institutionalized in the educational system. According to the theory, institutions often make decisions based on group-level assumptions rather than individual assessments (Arrow, 1973, as cited in Nwaka-Nwandu et al., 2024). As a result,

admissions officers, scholarship committees, and employers may rely on generalized stereotypes about age, rather than evaluating candidates on their specific skills, motivations, or potential. This reliance on group-level generalizations perpetuates systemic age discrimination and hinders the potential of non-traditional learners in the field of physics (Nwaka-Nwandu et al., 2024). The lack of individualized consideration in policy decisions leads to a self-reinforcing cycle, where older learners are continually excluded and their potential contributions to the discipline are undervalued.

Impact of age-based restrictions on participation and achievement in physics

The exclusionary effects of age discrimination in physics education have profound consequences for both participation and achievement. By imposing age limits on access to physics programs, Nigeria's education system reduces the pool of potential students who may otherwise wish to pursue the discipline (Amusa, 2020; Omosewo, 2009). This is particularly detrimental for individuals who have been denied the opportunity to pursue higher education due to socio-economic factors, gender discrimination, or other systemic barriers (Salihu et al., 2016; Agbaire & Dunne, 2024). Age-based restrictions on access are an additional layer of exclusion for these populations, exacerbating existing inequalities (Nwaka-Nwandu et al., 2024).

The psychological effects of age discrimination further compound these barriers. Although this specific topic is not directly addressed in the available literature, other studies note that older candidates often experience discouragement or disqualification due to institutional or cultural age norms (Nwaka-Nwandu et al., 2024). While imposter syndrome among older physics students is not directly documented in the provided texts, it is reasonable to interpret from findings of Nwaka-Nwandu et al, 2024 and Amusa, 2020 that age-based exclusion contributes to a less supportive academic environment for non-traditional learners. This exclusion undermines the development of a truly inclusive and supportive learning environment in physics (Amusa, 2020; Adolphus, 2019; Omosewo, 2009).

Moreover, the impact of age discrimination is not limited to access and achievement in individual programs; it affects broader participation in the field of physics in Nigeria. By creating an environment that devalues the intellectual potential of older individuals, the educational system not only discourages those learners from entering the field but also perpetuates a culture of ageism in the broader scientific community (Nwaka-Nwandu et al., 2024). This results in a physics education system that fails to reflect the diversity of intellectual

potential that exists across different age groups. A more inclusive and equitable education system would recognize the value of learners at all stages of life, fostering an environment where all individuals, regardless of age, are given the tools and opportunities they need to succeed in the field of physics.

Implications for policy and practice in Nigerian physics education

The age-based restrictions embedded in Nigeria's educational and professional systems have significant implications for both individuals and society. These policies, particularly in the context of physics education, limit access to knowledge and opportunities for a broad spectrum of learners, particularly older individuals who may have taken non-traditional routes to higher education or those seeking to transition into new fields. The exclusion of older candidates due to age limits in university admissions, scholarships, internships, and job placements reinforces stereotypes that youth is synonymous with intellectual capacity, undermining the principles of lifelong learning and the recognition of diverse pathways to success (Nwaka-Nwandu et al., 2024; Amusa, 2020).

The impact of these exclusionary practices extends beyond the individual level, affecting the development of an inclusive and innovative scientific community. By narrowing the pool of potential students and professionals, these policies stifle diversity of thought, experience, and approach within physics education and research. Diverse perspectives, particularly those brought by older individuals with varying life experiences, are critical for fostering creativity and innovation in scientific disciplines (Nwaka-Nwandu et al., 2024). The marginalization of non-traditional learners also perpetuates broader societal inequalities, as age becomes an additional axis of exclusion for groups already disadvantaged by gender, socioeconomic status, or geographical location (Salihu et al., 2016; Agbaire & Dunne, 2024).

Furthermore, the persistence of age-related policies undermines Nigeria's potential for technological and scientific advancement. In a rapidly evolving global landscape, where lifelong learning and re-skilling are crucial for staying competitive, denying access to educational opportunities based on age places Nigeria at a disadvantage. These practices not only limit the intellectual capital available to the country but also prevent the full utilization of human resources that could contribute to national development.

Conclusion

Age-based restrictions in Nigeria's educational system, particularly in fields like physics, create significant barriers to access and

achievement for non-traditional learners. These policies reinforce stereotypes that limit intellectual potential to younger individuals, excluding those who may bring valuable life experience and expertise. To foster a more inclusive and innovative educational environment, it is crucial to rethink these age limits, promoting opportunities for lifelong learning and reducing systemic ageism. Such changes would not only empower individuals but also contribute to the development of a more diverse and dynamic scientific community in Nigeria.

Policy recommendations for inclusive and age-diverse physics education

To address the systemic barriers posed by age-based discrimination in Nigeria's educational system, the following recommendations are proposed:

Policy Reform on Age Restrictions: Educational institutions, particularly universities, should reconsider age-based admission criteria, particularly for disciplines like physics that benefit from a diverse pool of learners. Policies should focus on evaluating candidates based on their academic potential, motivation, and previous experiences rather than strictly adhering to age limits. The Nigerian government should initiate policy reforms that recognize the value of mature learners and promote inclusivity in higher education (Amusa, 2020; Nwaka-Nwandu et al., 2024).

Lifelong Learning and Re-skilling Initiatives: Nigeria should actively promote lifelong learning and re-skilling programs that allow individuals to pursue higher education or shift careers at any stage of their lives. This approach would encourage adult learners to return to the academic sphere, particularly in fields such as physics, where innovation and progress are often driven by diverse contributions. Scholarships, internships, and job placements should be designed with flexibility in mind, accommodating learners of all ages and backgrounds (Nwaka-Nwandu et al., 2024).

Expansion of Scholarship Opportunities: Age restrictions on scholarships should be eliminated or adjusted to accommodate older applicants. Many mature learners who seek to pursue postgraduate studies, especially in demanding fields like physics, are often denied opportunities due to age caps. Adjusting these policies will encourage the inclusion of individuals who have gained valuable life and work experiences that can contribute to their academic success (Amusa, 2020). In particular, funding programs for adult learners returning to academia should be expanded to support individuals who may need financial assistance to pursue further education.

Public Awareness Campaigns: To address the cultural biases that associate youth with intellectual potential, Nigeria needs public

awareness campaigns that challenge these age-related stereotypes. These campaigns should emphasize the importance of diverse educational pathways and the value of knowledge gained through experience. The narratives around aging and education must shift to reflect the reality that intellectual capability does not diminish with age, and that a wide range of learners, regardless of age, contribute meaningfully to academic and professional environments (Adolphus, 2019; Amusa, 2020).

Institutional Support for Non-Traditional Learners: Nigerian universities and educational institutions should provide additional support structures for non-traditional learners, including mentorship programs, counselling services, and flexible learning options (such as part-time or online courses). These initiatives would help to reduce the psychological impacts of ageism, such as imposter syndrome, that may affect older students entering academic environments where they may feel marginalized. Creating a more inclusive academic culture would enable older learners to thrive and contribute to the academic community in meaningful ways (Amusa, 2020).

Promotion of Interdisciplinary Learning: Educational systems should encourage interdisciplinary learning that brings together students of all ages and backgrounds. Physics programs, in particular, should integrate real-world problem-solving, where mature learners can apply their life experiences to the field's academic challenges. Interdisciplinary collaboration can foster innovative thinking and bridge the gap between theoretical knowledge and practical, real-world applications, benefiting both older and younger learners alike (Nwaka-Nwandu et al., 2024).

Monitoring and Evaluation: The Nigerian government and educational institutions should implement mechanisms for monitoring and evaluating the effectiveness of policies aimed at reducing age discrimination in education. This includes tracking the impact of age-inclusive policies on enrollment rates, academic performance, and career advancement of older learners. Ongoing assessment will ensure that progress is made in creating a more inclusive educational system and will allow for the continuous refinement of policies to meet the needs of diverse learners.

In conclusion, removing age-based barriers in Nigeria's educational and professional systems is not only necessary for fostering inclusivity but also for driving innovation and development in critical fields like physics. By promoting age diversity in education, Nigeria can harness the full potential of its human capital, enhance its scientific and technological advancements, and ensure that its educational system reflects the realities of lifelong learning in the 21st century**.**

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