TEACHING PASSIVE AS A FIELD-CHARACTERISTIC FEATURE OF FLT DISCIPLINARY DISCOURSE. THE CASE OF ENGINEERING

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Abstract: *Creating a functional disciplinary discourse in a FLT context is a challenge for foreign language teachers who should problematize issues contributing to the foundation of the disciplinary discourse such as the specialization of voice depending on the type of production, written or oral, and genre students should be able to generate. Raising awareness in students about the specialization of passive voice in describing the technical processes in the case of engineering students is a key element to learning how to produce adapted and successful pieces of texts that serve the purpose of emphasizing technological processes, which is characteristic of the scientific discourse. Consequently, this piece of research aims at bringing evidence in support of the hypothesis that by constant training and practice students become aware of the cognitive connection between the use of passive voice and the informed production of disciplinary discourse. In order to do so, we have conducted an empirical study which verifies students' capacity of adjusting the voice depending on the contexts, thus demonstrating a clear cognitive separation between a daily regular discourse and a technical engineering one. The results of the study indicate a straightforward correlation between the task genre and the voice selected by students, which is an essential element in proving awareness of their belonging to a disciplinary discourse which they have taken in and used accordingly.*

Keywords: *disciplinary discourse; passive voice; FLT; task; engineering.*

Topic presentation and research purpose

Teaching university disciplines means introducing students to discourses specific to those subjects only and getting them familiarized to their formal linguistic conventions with a view to preparing them to become members of disciplinary communities of practice and

acquiring ‘a disciplinary voice’ (McArthur, 2010, p. 119). Starting from vocabulary and ending with routines or tools, disciplinary discourses are linguistic constructs that are largely acknowledged by the specialists in the field and replicated by university teachers who teach and pass them down to any new generation of specialists as a professional commodity that ensures a coherent communication within an extended disciplinary community. The purpose of this empirical study is to test the cognitive correlation established between the use of passive voice and the engineering disciplinary discourse in technical students in their first and second year of foreign language acquisition[1]. This study hypothesizes that students at technical faculties habituate to associate engineering disciplinary discourse to passive voice as a consequence of the specificity of the domain of engineering where technological processes tend to receive more emphasis over the executants who seem to recede into the background. Moreover, a subsequent purpose of this piece of research is to demonstrate the students’ contribution to the constant disciplinary discourse strengthening by their preference for passive structures over active ones. The research question that this piece of research plans to find an answer to is: Do students directly connect the production/interpretation of a technical text to the use of the passive voice?

Disciplinary discourses and direct implications to teaching with a view to creating an immersive disciplinary discourse

The structure of this paper follows suit its purpose which is to identify the manner(s) in which the teaching and, implicitly, the use of passive voice can benefit the creation and/ or propagation of a disciplinary discourse among engineering students when teaching foreign languages. The paper contains a brief review of the literature on disciplinary discourses and empirical evidence on how passive voice contributes to the enlargement and perfecting of engineering disciplinary discourse.

Engineering is an academic field where teaching, either theoretical or practical, counts on data, facts, theories, and processes which leave little or no place for personal opinions or interpretations, which impacts the teaching of foreign languages. Teaching foreign languages to technical students means accessing the specific domain in a foreign language other than the native one, but not as elaborately and intricately as when teaching mechanics or mathematical analysis[2].

[1] The foreign languages that the participating student’s study are English and French. The students are enrolled in Romanian-taught Bachelor of Science programmes and the foreign language they study is elected from between English and French.

[2] The status of the foreign language teacher is a special one bearing in mind that s/he is a

Teaching foreign language to engineering students means to get students accustomed to this discourse in that particular language, preparing them to recognize patterns and be able to produce their own messages in the target language. To communicate engineering in any foreign language means integrating certain grammar and vocabulary into specialised topics that grow students' comprehension and control of the domain. Beside grammar and vocabulary, students are accustomed to texts produced in that field, to communicative conventions, to types of documents, to topics that are characteristic to a domain only. Last but not least, teaching foreign languages to engineering students presupposes exposure to norms for both oral and written communication and pragmatic (McArthur, 2010, p. 45) and semantic values in interaction, which mark the domain.

For example, engineering is perceived as a domain where objectivity is a mandatory feature which translates linguistically into an intense search for objectifying strategies of which personalisation and passive voice are generally revered. 'Scientific objectivity' (Okamoto, 2023, p. 19) is instrumentalised by impersonal structures ('It is said …', 'It is claimed …', 'It is maintained …', etc) or by means of the passive voice, 'the scientific passive', which according to Conrad (2018, p. 38) places 'the focus on materials, processes, and methods rather than human agents, which reflects a basis of knowledge that does not depend on individual scientists'. Darling (2006, p. 20) dwells on 'the object' or 'the visual representation of the object' and 'away from the self or personal identity of the speaker' as a major hallmark of what she calls 'discourse of technology', also acknowledged as disciplinary discourse.

Disciplinary discourse, thanks to its complexity mainly, has been differently defined with emphasis on elements that are considered substantial by several researchers. Thus, Airey and Linder (2009, p. 27) deem disciplinary discourse as "the complex of representations, tools and activities of a discipline, describing how it can be seen as being made up of various modes". They foreground the disciplinary discourse's rather subjective value as long as representations on what disciplinary discourse is are personal and embedded into one's understanding of the domain. On the other hand, Becher (1987, p. 261) considers other concepts as revelatory for the study of disciplinary discourse, namely, verbal indicators, commendation characteristic terms, criticism, nature of professional publications, the generation and development of arguments. Though the disciplinary discourse presupposes diversity and a strong footing in miscellaneous criteria,

specialist in teaching grammar and vocabulary elements in the target language, but s/he is not a specialist in the domain technical students train in.

Becher demonstrates a multifarious comprehension of the phenomenon which is so large as to include anything from in-texts features to publications. Furthermore, Hyland (2013) points to the powerful association between someone's belonging to a certain academic field and the way language is used to produce the discourse that singles it out from all the other disciplines. Hyland's conjecture is contradicted by those who opine in favour of the existence of a 'common core' (Dudley-Evans, St. John, 1998) specific for engineering, for example. Aware of the divergent takes of disciplinary discourse, Wozniak (2012, p. 4) supports the struggle of analysing the discourse of specialised fields as it may as well lead to a better clarification of the different aspects that underlie, substantiate and voice discourse specialisation. In the challenging undertaking of discovering what disciplinary discourse is, Charaudeau & Maingueneau (2002, p. 601) bring into discussion the distinction between specialised language and specialised discourse in the tradition of the Saussurean distinction between langue and parole. Accordingly, in the context of FLT the distinction between langue and parole is even more obscure given the fact that the students do not speak English natively, which reduces their likelihood of producing parole. Gotti (2003) deems that specialised vocabulary is monoreferential[3], it is denotative, and lacks ambiguity and polysemy. Gotti (2003, p. 29) appraises specialised discourse as being characterised by "exactitude, simplicity and clarity, objectivity, abstractness, generalisation, density of information, brevity, emotional neutrality, unambiguousness, impersonality and logical consistency." A similar opinion is expressed by Chirițescu & Păunescu (2021, p. 93) who reckon that the referential factor of specialized vocabulary is the definitory feature that distinguishes it from general language. All these features and many others need to be taught to students in order to be able to produce valuable pieces of professional oral and written communication which naturally and directly fall into the category of engineering disciplinary discourse.

The contribution of the passive voice to the strengthening of disciplinary discourse in engineering

Contested by some linguists owing to its seeming uselessness, appreciated by others due to its semantic value, passive voice is an

[3] Monoreferential means that the term refers to only one object in the technical domain. Still, although the polysemantic meanings of most technical words are reduced to only one object, there are cases when technical words are no longer monoreferential. For example, engine (A2) is the part of the vehicle that produces the power to make the vehicle move. Yet, an engine (B2) is also a large vehicle that pulls a railway train. Though technical, the term engine has a polysemantic meaning and it is no longer monoreferential (source: Collins Dictionary, https://www.collinsdictionary.com/dictionary/english/engine).

element which may contribute to the creation of a disciplinary discourse adapted to students' fields of study. As indicated above, disciplinary discourse, unlike general discourse or non-disciplinary discourse, predominantly seems to accommodate discursive features signalling objectivity. Of all the objectifying traits, passives bring their significant contribution to the emphasis of *what* happens to the detriment of *who* does the action by removing the subject and giving prominence to the direct object. Passive constructions[4] are perfect equivalents or *rearrangements* of active constructions in the sense that the message is basically the same (Quirk et al., 1985, p. 159) still, there is a semantic difference between them which illustrates the intentional focus of the speaker (on either the agent or the patient). Though the difference may not be considered significant in terms of message, the semantic distinction does impact discourse with reference to perspective, importance and focus (Zorbas, 2014, p. 5) that either form brings along. One's preference for a passive construction over an active one might derive from one's not knowing the agent or the performer of the action or from one's decision that the agent/ performer is not important (Miller, 2002, pp. 151–152; Quirk et al., 1985, p. 159). When choosing an active construction, the speaker discloses the agent's volitional action which is carried out on purpose and which drastically impacts the discourse (Payne, 2010, p. 137), which is the opposite of the passive construction that foregrounds the *change of state* undergone by the patient (Payne, 2010, p. 137). Parrott (2010, p. 331) itemizes more semantic grounds for a specialization of passive constructions which run counter active semantic values. Ergo, Parrott calls attention to *process description* which might benefit from the use of a passive construction given the irrelevance of the agent, *procedure description in scientific reporting* when the focus is laid on what has been done or in *academic discourse to introduce ideas* when the author of ideas is irrelevant or far less important than the ideas themselves. In a similar way, Greenbaum & Nelson (2002, p. 18) consider that voice use is more of a problem of genre since scientific writing is largely associated with passive constructions. Zorbas (2014, p. 4) propounds that passive should act as 'a ticket to authority' for the texts that contain it, given the fact that it is extensively used in scientific reports and articles where specialists present the results of their research. Tarone et al., (1998, p. 114) view passive voice as "one

[4] Parrott (2000: 337) notices that the greatest challenge for some learners may not be the form of passive voice, but the identification of the situations when it needs to be used, which highlights that fact that when dealing with engineering students the teacher's main concern needs to be to teach the situations when passive voice is used in the engineering disciplinary discourse (documents, reports, product presentations, meeting participation, technical book reading, etc.)

of the most salient grammatical features in science and technology" on account of its traditional association with scientific discourse. All these arguments demonstrate the connection between the use of the passive voice and the disciplinary discourse specific to engineering students.

Study methodology, instruments, participants

In order to test engineering students' adherence to the disciplinary discourse they are expected to embrace for better career prospects when learning foreign languages for specific purposes two research instruments have been devised: a structured in-house questionnaire and a free-answer survey meant to verify students' correlation between their specialised field and the use of the passive voice. Both the questionnaire and the free-answer survey have been administered after the theoretical aspects of the passive voice have been retaught (rules of formation and situations when using it is recommended) and the students have had consistent practice and exposure to activities and exercises that have been aimed at getting them familiarized with both form and situations when the use of passive voice is necessary and recommended. Each instrument has been devised in order to check different aspects; the questionnaire is meant to check students' familiarity with the structural elements of the passive voice transformations, the differences between active and passive voice, the existence or non-existence of the agent complement in the sentence, the semantic values that either voice brings along when used in a context. Consequently, the methodology used in dealing with the questionnaire is a quantitative one, as the intention is to determine with precision the number of students that correctly answers the questions which check theoretical, practical and semantic information on the passive voice and its connection to disciplinary discourse. The free-answer survey is in fact a piece of writing where students are requested to produce a five line long descriptive text of their own on the thermal treatment process applied to metals. In order to guide their technical writing, they are offered some technical vocabulary (verbs, nouns, adjectives) which they might use when writing the task. The purpose of the free-answer survey is to test if the students, when asked to produce a text on a technical topic, consider using any passive form, which they have been told to be the practice in technical writing. The methodology adopted for this instrument is a qualitative one as the data collected will be contextualized and interpreted.

The students participating in the research are 173 first- and second-year engineering students who study either English or French as their foreign language. Given the fact that this is not a comparative-contrastive study between the degree of adherence to the disciplinary

discourse by either the English or the French learning students, their answers are dealt with together. The students have been instructed using the same materials and the questionnaires have had the same questions in either English or French. The purpose of having a mixed group of students

Questionnaire data analysis

The objective of this piece of research is to check the students' adherence to the disciplinary discourse developed throughout foreign language classes in as far as the use of passive voice is concerned. As a consequence of the association established between technical communication and passive voice, this research aims at measuring the participant students' rate of success in their solving the twenty closed-ended questions in the questionnaire. The questions vary in terms of the number of options the students have to choose from. As follows, there have been 4 dichotomous, and 16 nominal-polytomous questions. The data collected have been transformed into a table (see Table 1. below) that illustrates the degree of students' compliance with the questions. The values in the table illustrate the fact that in eight cases out of twenty the percentage of student compliance with the task is under 50%, whereas in the remaining twelve cases the degree of compliance varies between 50.3% to 71.7% which represents the highest compliance in the whole questionnaire. The lowest percentage has been obtained for question number nine which contained four answer options of which three are correct and students have been asked to identify all the situations when the presence of the agent complement is mandatory. Only 20.8% of respondents identified all three correct situations when the agent complement was compulsory. The highest percentage has been obtained in the case of the dichotomous question number four which asked students to decide which sentence is active and which is passive and 71.7% identified the correct answer. If some questions verified the passive structure, others attempted to check students' awareness of the connection between disciplinary discourse and passive voice. Such is the case of question eleven which asked students in a dichotomous question to choose the sentence which is more diplomatic and neuter. 67.6% of the respondents indicated that the passive sentence is more diplomatic and neuter, which correlates directly with the disciplinary discourse that they are part of.

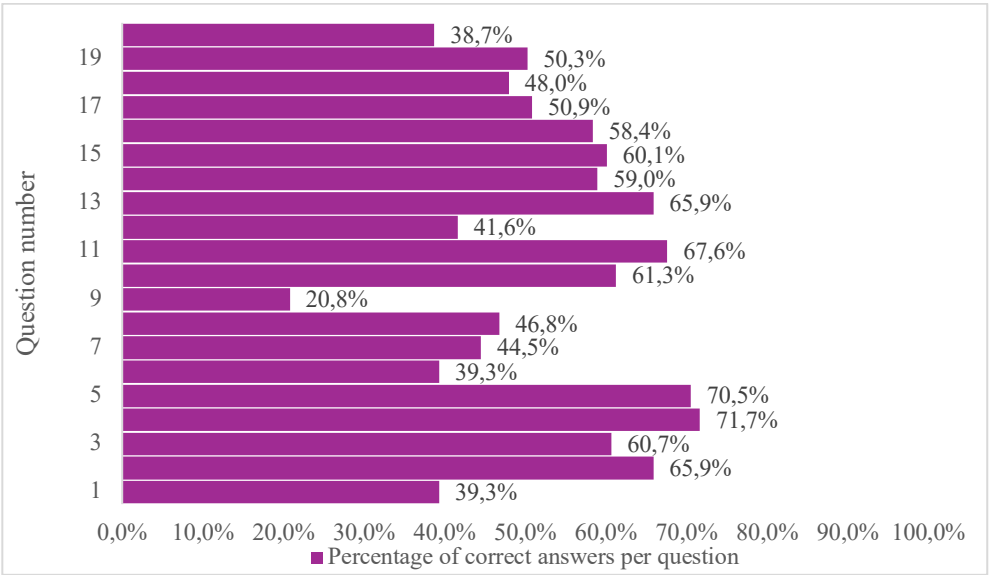

Table 1. The respondents' answers to the questionnaire that verifies their passive voice knowledge.

Of the twenty questions in the questionnaire, some questions will be discussed as that can clearly indicate the participants' adherence to the disciplinary discourse that is grown in their university groups. To particularize, questions 2 in the questionnaire investigates whether or not students associate the technical description of how a machinery functions to a text where the passive voice is preferred to the active one. 65.9% of the respondents expect to find verbs in the passive voice and the machinery as the sentence subject in a technical manual. Question 3 aims at measuring students' understanding of the role of the agent complement and its mandatory/optional character. Thus, the students are asked to choose from the 'always mandatory', 'sometimes mandatory' and 'never mandatory' options and the results show that 60.7% are informed about the restraint character of the agent complement's use.

Question 4 contemplates to test students' familiarity with the formal characteristics of both active and passive voice in order to recognize them when seeing them. Hence, they are asked to recognize if a particular sentence detailing on the features of materials is either active or passive. As mentioned before, this question has obtained the highest score in the whole questionnaire, 71.7%, which means that the respondents are able to acknowledge the formal elements of the passive voice (the auxiliary 'to be'/ 'être' and the past participle of the verb that describes the action) in a technical context. But students are equally tested on their acquaintance with the active voice, as well

because they need to be equipped with solid information on when the active or the passive is the better choice.

Consequently, in question 7 students are requested to identify the sentence that does not contain a verb in the passive verb. In the case of question 7, there are four options of which three contain verbs in the passive voice and one a verb in the active voice and the respondents need to identify the one that does not contain a passive verb. A further mention that should be made at this point is that all sentences are technical-wise as there is another important issue that students need to understand; namely, not every piece of writing presupposes an automated use of the passive voice on condition the text is technical. In the case of question 7, the correct answers quantify 44.7%, which means that less than half of the respondents actually identified correctly the sentence that contained an active verb. Given that question 7 (the respondents are requested to identify the active structure) is the reverse of question 4 (the students are asked to identify the passive structure) the results are expected to indicate an equal control of both structures. Yet, the results disclose a consistent gap between the correct answers provided by students in as far as the two questions are concerned. The authors speculate that the better results the respondents obtained in identifying the passive voice may be explained by the focus that has been laid on passive voice and its use. The worse results obtained when demanded to identify the sentence that is not passive, hence active, may result from the fact that the active voice is considered default and it has not been the focus of the teaching activity as it has been the case with the passive voice.

Question 8 is equally aimed at verifying students' awareness of the of the mandatory and optional constituents of the passive voice. In fact, students are asked to decide whether the performer, the receiver or the agent is normally expected to appear or be used in a passivized structure. 46.8 % of the respondents chose the receiver as the correct answer, which leaves more than half of the respondents in the wrong. In order to repair such problems, remedial measures will be proposed further on.

One aspect that the authors are particularly interested in is verifying the respondents' correlating the use of the passive voice to diplomacy and neutrality as opposed to the directness of the active voice. 67.6% of the respondents straightforwardly associated a situation when directness should be avoided demonstrating that they have understood and are able to associate the expected voice to a particular context.

Survey data analysis

The main goal that is targeted in the free-answer survey is to monitor the respondents' output in terms of their informed adaptation to the context they are asked to produce a text of their own for. Thus, the respondents are asked to produce a five-line text where to share the knowledge they have acquired on the process of metal heat treatment. Moreover, students are provided a range of verbs, nouns and adjectives which are meant to help them express their ideas without the trouble of remembering words. Clearly, the verbs, nouns and adjectives are connected to heat treatment in metals, but their technical character has not been mentioned. Equally, no indication as to what voice is preferred in this context has been given.

One first element that is worth mentioning is that students did try to produce some texts of their own where to state what they know on the topic of metals' heat treatment. Still, the purpose of the research is to notice if the respondents associate the domain engineering to the use of passive voice in writings of their own. The analysis of their texts reveals that the highest number of passive structures per text is six as it is the case for three respondents. Six respondents used the passive voice for five times in their texts. The bulk of answers contains three, two and one passive voice structures. Nevertheless, there are twenty texts which do not contain any passive voice structures, which expounds that the immediate correlation between speaking or writing in a technical domain and the passive voice use does not happen in all the cases. In the case of the students that did include at least one passive voice structure in their text, it has been appreciated that, though still faulty, the correlation between the production of technical disciplinary discourses and the use of the passive voice does happen. According to the principle 'the more, the better', any text produced by the students that contained at least one passive voice structure has stood as proof of the immediate association between the passive voice and the technical context they are asked to produce a text about. The examples underneath is extracted from the respondents' texts in both English and French and they contain one correct passive voice structure per sentence.

(1) The temperature of the metal **is dropped** after the metal was out of the furnal [sic].
(2) The internal structure of the metal **was** better **modified**.
(3) The finished shape **is quenched** in an oil.
(4) Dans le processus de traitement thermique, un matériau **est chauffé** à une température spécifique.

(5) Le traitement thermique peut **<u>être utilisé</u>** à différentes stades du processus de fabrication pour modifier certains propriétaires du métal ou de l'alliage.
(6) Les matériaux **<u>sont traités</u>** thermiquement pour les améliorer.

It is to be noticed that there is no great variety in terms of the tense students used when producing their texts. Preponderantly, present passive is used and some past passive forms, without any other tenses or aspects being used. Nevertheless, the students produced incorrect passive structures as well, strengthening the necessity to further practice the study of the passive voice in the production of technical communication.

(7) The material [sic] is drawed [sic] in oil or water to facilitate the cooling process.
(8) In [sic] word [sic] exist [sic] a lot of materials that materials [sic] can be treatment [sic] in many different ways, for example, they can be melted, frouzen [sic].
(9) The heating treatment is used for melting materials, such as iron, which are cool [sic] down with water.
(10) Le processus technologique dans lequel sont présentés [sic] des méthodes de traitement thermique est utilisés [sic] selon le cas.
(11) Les pièces ont été trempés [sic] ou soumis [sic] à des contraintes.
(12) Les métaux doivent être chauffées [sic] plus lentement.

Depending on the language, there have been some recurrent mistakes that have appeared in their written production on a technical topic. For instance, in English, such a mistake is caused by the students' confusion between 'to draw' and 'to drown' while still observing the past participle formation. Sometimes, the mistakes are caused by an erroneous speech part as in the case of 'can be treatment' where the student has chosen to use a noun instead of a past participle. In other cases, the respondents left the verb in its V1 form as in 'are cool' instead of 'are cooled'. Conclusively, errors in English regularly surge from past perfect misuse. Equally, French respondents seem to face the serious problem of past participle agreement which is established depending on the gender and number of the passive structure subject. If to this the arbitrariness of the nouns' gender is added, a clearer representation of what might go wrong in French is gained, and more pertinent remedial solutions can be implemented.

Despite the mistakes that appear in the respondents' written productions, they demonstrate to be in control of a range of skills, knowledge that permit them to deal with a task where they need to

produce a text of interest for the engineering domain. Undeterred by the fact that they are given the words, they succeed in demonstrating a competence in producing texts with a technical content by even further introducing a range of passive structures, which shows their informed comprehension of the relationship between the heat treatment in metals and the use of the passive voice. That demonstrates a deeper understanding of the roles of performer, receiver and agent and consequently a correlation between a disciplinary discourse they are immersed into and the features of language that characterise it.

Remedies and correctives

Both the questionnaire and the survey have provided the data necessary for this study, but, at the same time, it has revealed some circumstances that could further improve both the teaching and consequently the teaching's outcome. When analysing the data in the questionnaire, it turns out that there are aspects that students are not in full control of. Overall, students seem to be better at associating the use of the passive voice to the technical disciplinary discourse than at remembering the correct past participle or at doing the appropriate agreement between the subject and the past participle in French. Showing a constant interest in the acquisition of the field-related disciplinary discourse, a special focus should be placed on practice as students show deficiencies and limitations in the formation of the passive forms. The limited use of the passive structures in the present mostly is proof of the fact that Past, Present Perfect, Past Perfect or Future are completely ignored by students. The past participle of irregular verbs is a topic to be further exploited and practiced given its importance in the formation of the passive voice, but not only. Further practice of the agreement between the subject and the past participle in French is a complex issue which necessitates practice in order to comprehend how passive voice is formed in French. There are elements that can be improved from the point of view of the development of the disciplinary discourse which is a conglomerate of specialised contexts that require for adequate vocabulary-grammar input for future professional purposes.

Conclusions

This article has intended to demonstrate that teaching foreign languages at the tertiary level is more than teaching a foreign language. It is about getting students familiarized with and integrated into disciplinary discourses which teach students not foreign languages only, but specialty in foreign languages. More precisely, the article has aimed at measuring by twosome post-teaching instruments (a questionnaire and a survey) the respondents' adherence to the

engineering disciplinary discourse which is largely considered to be characterised by the use, among others, of passive voice structures, which concords with the type of texts and discourses largely produced in engineering.

The findings of the research confirm that students are aware of the existence of a disciplinary discourse characteristic to their field and they strive to insert the elements that they understand are necessary in order to render the text as specialised as possible. The students demonstrate their adherence to the engineering disciplinary discourse by demonstrating that they are skilled enough to produce texts that include the largely acknowledged features of technical texts. And because the article has intended to measure the relationship between the disciplinary discourse and the use of passive voice, the large majority of the respondents have included passive voice structures when asked to produce a text on a technical topic. Though the number of the passive voice structures varies from one to six per text unit produced by respondents, though there is a rather important number of students that have not succeeded in associating the concept of technical text to the use of passive voice, there is still considerable advancement in the students' association between technological processes and the use of passive voice as one of the multiple characteristics of learning foreign languages for special purposes.

Still, the research revealed that much practice is needed in order to decrease the number of students who have not included any passive voice structure in their text or those that have attempted at inserting one, but have not succeeded. The data collected demonstrates that the students do know that foreign languages for engineering students presuppose an adaptation to the field language requirements, which, once learnt, is maximized by students' experimentation. The problems that have been identified while practicing the use of passive voice in the context of technological processes description need to be addressed so that the likelihood of making mistakes is reduced. The researchers are completely aware that this topic is only an aspect that contributes to what is defined as disciplinary discourse, but they do intend to continue their research into the investigation of disciplinary discourses.

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