

A Comparative Analysis of Errors in the Written Productions of Spanish Undergraduate Engineering Students

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Abstract

Writing is a language skill that for most FL students is quite difficult to master. Especially for undergraduate technical students, who have just finished their compulsory secondary education, this seems to be a challenging task since the presence of difficulties in any FL writing forces them to commit various errors in their written productions. Therefore, what this research paper tries to identify is those errors made by engineering students in a public Spanish Polytechnic University over the last two academic years. We shall attempt to categorise errors based on their source following the comparative taxonomy proposed by Dulay, Burt and Krashen. So, in order to conduct this research, a total of 60 essays undertaken by a number of engineering students were selected taking into account their written productions about alternative fuels in the task assigned during the semester. The main objective of this study is to prove that the results obtained from this analysis have undoubtedly demonstrated that, and here is where it lays the significance of this paper, the majority of errors committed by these engineering students can be classified as belonging to the interlingual category, being the category with the highest number of occurrences, unlike previous researches carried out beforehand.

Keywords: analysis of errors, comparative taxonomy, engineering students, types of errors

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1. Introduction

Nowadays, according to Corder, there is a clear tendency to consider the errors made by students in their process of language learning not as a negative aspect of language learning but, rather on the contrary, as a natural step in the development of their language skills. As Corder stated “the errors that learners make are a major element in the feedback system of the process that we call language teaching and learning” (Corder, 1981: 35).

In the past, teachers considered errors committed by students as something undesirable, something to prevent from occurring at all means. But in the last decades, given the different scientific studies published, researchers came to consider errors as evidence for a creative process in language learning

Error analysis provides us with scientific evidence for the system of language that students are using at any time in the course of development of their studies. Basically, this analysis consists of four main steps: to identify the errors, to explain the errors, to categorise the errors, and to evaluate the errors.

Consequently, the errors which emerge from the students’ learning process can clearly tell us what needs to be taught or fostered and how the learning is ongoing at any time in order to take the necessary adjustments. Quoting Saville-Troike “learner errors are windows into the language learner’s mind” (Saville-Troike, 2006: 39).

Also, Dulay, Burt, and Krashen (1982) believe that an analysis of errors made by language learners can help us understand the process of language learning deeply. Besides, it also helps teachers to decide on those teaching materials that best fit the learning needs of the language learners. Therefore, at universities, students are taught to master, at least up to a certain level, English in its four different skills: listening, speaking, reading, and writing. And among these four skills, writing is undoubtedly the most important productive to be learned. But not only is the most productive of the four skills, but it is also the one that they usually face with certain suspicion and even fear due to their proven inability to express correctly in written English, regardless of the nature of the task assigned. As a result, this turns out to be problematic when it comes to giving feedback.

We should especially bear in mind the fact that we are not working with students doing an English studies degree at university, whose English level could be expected to be higher than average, but a technical one within the engineering field. Consequently, all this background information has its natural reflection on the numerous errors committed by them in the student written output which had to be undertaken and assessed.

In consonance, the research methodology conveyed in this study shall consist of following the comparative analysis of errors, as proposed by Dulay, Burt, and Krashen (1982), in order to categorise the errors made in the written productions of engineering students over the last two academic courses. This analysis will provide us with a clear perspective on which category of errors is the most frequent amongst them out of these four: ambiguous errors, developmental errors, interlingual errors, and other errors.

2. Literature review

Along the present chapter we will delve into an account of the main approaches and researches regarding error analysis. According to Saville-Troike, error analysis is the very first approach to the study of Second Language Acquisition (SLA). This analysis includes an internal focus on “the learner’s creative ability to construct the language” (Saville-Troike, 2006: 38). Therefore, it means it is the first step we must take in order to grasp the acquisition of a second language.

Error Analysis provides evidence not only for the system of language which a learner is using at any particular point in the course of his or her L2 development, but also for the different learner’s strategies in order to discover the language. Therefore, the errors which emerge from that learning process could tell the teacher what really needs to be taught and the researcher how the learning is actually proceeding.

Learner errors could provide us with an understanding of the underlying processes of Second Language Acquisition. And these processes, following Richards (1971), can be inferred from an examination of the learner language protocol, case studies, diary studies, classroom observation or experimental studies.

According to Corder, the procedure for conducting error analysis basically consists of 3 major stages: “recognition, description, and explanation of errors” (Corder, 1981: 126). These basic steps were somehow expanded by White, a few years later, who subsequently elaborated these previous three stages into the following steps: collection of data from the students’ compositions, identification of errors (labelling the errors with varying degrees of precision), classification into errors types, statement of relative frequency of error types, identification of the areas of difficulty in the target language, and remedial lesson therapy (1987).

Therefore, quoting Richard “errors are usually classified according to language components (phonological, morphological or syntactic)” (Richard, 1974: 45). This classification of errors was mostly followed and adopted in any research whose main goal was the analysis and source of errors.

Later on, both Dulay, Burt, and Krashen in 1982 first and James in 1998 later presented the most useful and commonly used bases for a descriptive classification of errors by describing them using different kinds of taxonomy: linguistic category, surface category, comparative taxonomy (the one selected for this research for practical purposes), and communicative effect.

The first taxonomy, linguistic category, carries out errors in terms of where the error is located in the overall system of the target language based on the linguistic item which is affected by the error (James, 1998). It clearly indicates in which component of language the error is located: phonology (pronunciation), syntax, and morphology (clause, noun phrase, verb phrase, auxiliaries, preposition, adjectives...). This framework is useful and applicable to handle the errors of relatively advanced learners, which is not our object of study.

The second taxonomy, surface strategy category, was also proposed by James (1998). This classification is based on the ways in which the learner’s erroneous version is different from the presumed target version. It highlights the ways in which the surface structures deviate. For example, learners may omit necessary items (omission), or add unnecessary ones (addition), or they may just misform items (misformation) or misorder them (misordering). This classification can give us a clear description about the cognitive processes that underlie the learner’s reconstruction of the new language which is being learned, which is not really our scope of interest in this paper. It also explains the fact that learner’s errors result from their active way in using the interim principles to produce the target language.

The third taxonomy, comparative taxonomy, which is the one we are basing ourselves on in order to conduct this research, was fully developed by Dulay, Burt, and Krashen in 1982. This is a comparison between the structures of second language errors and certain other types of constructions. So, for practical reasons, this is the taxonomy we will be applying along this study since it constitutes an attempt to compare the errors made with the learners’ native language. And these comparisons have resulted into four main error categories within this taxonomy: ambiguous, developmental, interlingual, and other.

Different researchers have consistently found that the great majority of errors in the language output of L2 learners, in this case undergraduate engineering students, is of the developmental type. Although adult learners, as in our case, tend to exhibit more mother-tongue influence in their errors than children normally do, adult interlingual errors also occur in relatively small numbers according to such researchers. However, as we will also be demonstrating in this research, in our study the great majority of the errors detected in the 130 essays examined correspond to the interlingual type, being incidentally developmental errors the least frequent.

Developmental errors are errors which are similar to those made by children learning the target language as their first language. For example, if we take the following utterance made by a Spanish child learning English “cat eat it”, the omission of both the definite article and the past tense marker may be classified as developmental because they are also found in the speech of children learning English as their first language. According to Dulay, Burt, and Krashen, developmental errors can also be classified into the following types: omissions (Mark no milk), additions (Mark doesn’t likes it onions), misformations (He gets a flowers), and misordering (What this is?).

Interlingual errors are similar in structure to a semantically equivalent phrase or sentence in the learner’s

native language. For example, the utterance “the woman slender” produced by a Spanish speaker reflects the word order of Spanish adjectival phrases [article + noun + adjective]. To identify an interlingual error, researchers normally translate the grammatical form of the learner’s phrase or sentence into the learner’s first language so as to see if there exist similarities. According to Ellis (1985), this type of error is interference or transfer, which means that the learner’s native language interferes with the learning of the L2, or rather it transfers into the learner’s developing L2 system.

Ambiguous errors could be equally classified as developmental or interlingual errors. This type of error reflects both the learner’s L1 and also the type of error in the speech of children acquiring English as their first language. For example, in the utterance “I no have a motorbike”, the negative construction reflects the learner’s native Spanish and it is also characteristic of the speech of children learning English as their first language.

Other errors make up a sort of grab bag for items that do not fit into any other previous category. For example, if we take the utterance “He do thirsty”, the speaker used neither the native Spanish structure (in the use of have for is as in He have hungry), nor an L2 developmental form (such as She hungry), where the auxiliary is omitted altogether.

Such an error would go into the other category, also called “unique errors” by Dulay and Burt (1974), referring to their being unique to L2 learners. These errors are not similar to those children make during the first language development, so they must be unique to second language learners, and since they are not interlingual, at least some of them must be unique reflections of a creative construction.

The fourth and last taxonomy is the communicative effect taxonomy, based on the perspective of their effect on the listener and the reader (Dulay, Burt, and Krashen, 1982). It deals with distinguishing between errors that seem to cause miscommunication and those that do not. Errors that affect the overall organization of the sentence usually hinder communication, while those errors that affect a single element of a sentence usually do not hinder communication. Since we are not focusing on oral communication along the present article, this taxonomy cannot aid us explain the origin and source of errors. And according to Dulay, Burt, and Krashen (1982), this type of taxonomy classifies errors into global errors and local errors.

Global errors are errors that affect the overall sentence organization and they significantly hinder communication. These errors include wrong order of major constituents as in “English language use many people”; missing, wrong or misplaced sentence connectors as in “He will be rich until he marry”; missing cues to signal obligatory exceptions to pervasive syntactic rules as in “The student’s proposal looked into the principal”; and regularization of pervasive syntactic rules to exceptions as in “We amused that movie very much”.

On the other hand, *local errors* are those that affect single elements in a sentence and that do not usually hinder communication significantly, at least not to a great extent. This type of errors includes errors in noun and verb inflections, articles, auxiliaries, and the formation of quantifiers, among some others.

In addition, we cannot skip the latest study carried out by McDowell and Liardet (2020) who employed an error analysis framework, elaborated with the functional descriptions of Systemic Functional Linguistics (SFL), to investigate error patterns in research article manuscripts written by Japanese materials scientists.

Results highlighted the difficulties that the nominal group constituted for participants, with almost half (47.81%) of the identified errors occurring within complex nominal groups. Further, the analysis revealed that the most dominant error pattern involved errors with articles and plural -s. Findings from the study also informed the design of a pedagogical tool to assist Japanese materials scientists and language specialists alike in identifying and rectifying these errors.

We can also include a recent study by Fatima Zahra El Malaki (2020) who attempted to designate and classify the causes of morphological errors committed by Moroccan EFL learners. She laid the focus on factors that increased the number of morphological errors in the students’ written productions. She also demonstrated that the students’ English morphological appropriateness was low and that they tended to overgeneralize the rule of the regular past tense over the irregular one.

Finally, it is also worthwhile mentioning here several studies carried out by some Spanish university professors such as Roca de Larios, Murphy, and Manchon Ruiz among others. In the last decades, this group of professors have published a number of articles dealing not only with the analysis of errors but also with other aspects regarding their interpretation, strategies and components.

3. Methodology

This study was carried out using a quantitative research design which was employed to reveal what and how many errors the students made, finding out the most frequent ones following the comparative taxonomy of errors as proposed by Dulay, Burt, and Krashen in 1982, as it was forestalled in the previous section.

The participants involved were a number of undergraduate engineering students, whose age ranged from 18 to 25 and who were mostly male given the technical nature of the degree, doing their engineering degree on a Spanish Polytechnic University. They were asked to undertake a written task on the characteristics of different energy sources as part of their continuous evaluation process. Along the semester, different topics were covered

in the English syllabus, including contents such as the use of alternative fuels, mechanics, electricity, wind turbines, robotics, or materials.

For this particular task, which was part of the first unit of the syllabus, they were asked to create a table of their own with different types of energy sources in which they had to analyse their characteristics considering both advantages and disadvantages. They were also supposed to include a proper reflection of their own at the end of the activity so we could check their grade of acquisition.

Regarding the students' English level, we have to consider the fact that in most cases their contact with the English language was limited to their studies during the compulsory Secondary Education for the last six years. Therefore, they are expected to attain a B2 level for the most part. However, there are some students, a very limited group though, whose level is higher than expected since they have been attending private classes or taking English courses in the last years.

The data attained for this research laid the focus on the numerous errors committed by the students in their written compositions. Henceforth, the information obtained was analysed by searching and classifying the errors found into the corresponding categories as established by Dulay, Burt, and Krashen: ambiguous errors, developmental errors, interlingual errors, and other errors.

Therefore, the instruments used to carry out this research corresponded to the writing productions from the students. At this point, it is also important to remark that, prior to the elaboration of the written task, the participants had received a proper amount of information on the topic. For that reason, they had the necessary input of knowledge in order to be able to write about the topic proposed from a theoretical point of view.

As for the procedure followed in this study, it took place during one semester of two consecutive academic courses. Data collection was carried out after the participants had been asked to write the task at home so it was later handed in to the course instructors. The analysis of the results obtained was checked and supervised by both instructors who were in charge of teaching the course following the comparative taxonomy as it was the only taxonomy considered for the present research according to the objectives of the study.

4. Results

From the analysis of the data obtained, we can anticipate, in general terms, that there was a total of 405 errors found in the 60 essays corresponding to the task accomplished. And following the comparative taxonomy of errors proposed by Dulay, Burt, and Krashen in 1982, the errors found in this task were classified into the following types: ambiguous errors, developmental errors, interlingual errors, and other errors. For the sake of clarity, we just arranged them in alphabetical order, regardless their frequency as we will be discussing from now on. The written task students had to undertake consisted of writing about alternative fuels in which they had to create a table with different energy sources, considering their characteristics, followed by a brief discussion of pros and cons. All this was meant to be done using comparative and contrast structures. And this task was delivered after the students had been explained a topic on the different alternative fuels existing at the beginning of the semester.

For this task, a total of 60 compositions were gathered and analysed over the last two academic courses. Having a close look at these 60 essays, in terms of the number of errors detected, in only 5 of them no errors were detected, which represented a scarce 8.3%. And quite expectably, the most represented group was the one composed by compositions having more than 5 errors, with a subtotal of 32 and a 53.4% overall. The rest was made up of essays with 1 or 2 errors, 12 out of 60 and a 20% of the total, and those with 3 or 4 errors, 11 out of 60, representing a 18.3%.

Focusing thus on the 55 compositions with at least one error for this first task, a total of 405 errors were detected overall. Following the comparative taxonomy classification, the most numerous category was that of *interlingual errors* with a subtotal of 149 errors, which represented a 36.8% of the total. And as it will be shown in table 1, interlingual errors were divided into the following types: addition of past tense, omission of preposition, inappropriate noun phrase, verb-number disagreement, inappropriate demonstrative, inappropriate preposition, and inappropriate pronoun.

Table 1. Number and percentage of interlingual errors in task

Type of error	Number of errors	Percentage
Addition of past tense	6	4%
Omission of preposition	8	5.3%
Inappropriate noun phrase	8	5.3%
Verb-number disagreement	92	61.8%
Inappropriate demonstrative	17	11.4%
Inappropriate preposition	16	10.7%
Inappropriate pronoun	2	1.3%
TOTAL	149	36.8%

Source: Own elaboration

As table 1 shows, 7 different types of interlingual errors were found in the students' compositions. If we refer to their frequency, the most outstanding type was that of the case of verb-number disagreement with 92 errors out of 149, representing a 61.8% overall. Considering the technical nature of the task, it seems reasonable to figure out this as being the most numerous since students tend to forget to pay attention to the concordance between the subject and the verb in the sentences. An example of this type of interlingual error could be: "In my opinion, fossil fuels has got two main advantages".

Some other recurrent interlingual errors were either the use of an inappropriate demonstrative, with 17 errors detected standing for a 11.4% of the total, or the use of an inappropriate preposition, with a similar figure, 16 errors which made up a 10.7%. An example of the former, an inappropriate demonstrative, could be the following; "In this days solar energy can be very profitable", whilst as an example of the latter, an inappropriate preposition, we could mention: "Electricity depends of the wind".

Two other types of interlingual errors with the same number of cases identified were the omission of a preposition and the use of an inappropriate noun phrase, with 8 errors each, which represented a 5.3% of the total. An illustrative sample of the omission of a preposition can be the next one: "Forget ___ ethylic alcohol, we make to make particular chemical processes with ethanol". On the other hand, an example of the use of an inappropriate noun phrase can be the following: "It contributes to rain acid".

The last but one type of interlingual error was the addition of the past tense, whether it being regular or irregular, with just 6 cases spotted, making up a scarce 4% overall. As an example of this type of error we can include this sentence: "Solar cells and panels didn't worked at night".

Finally, the least recurrent type of interlingual error in terms of frequency was the use of an inappropriate pronoun, something which happened just twice in the 55 compositions analysed, which roughly embodied a 1.3% overall. As an example of this type of error we could cite the next one: "... and its only affect us with sounds". At least, it seemed that the pronouns were correctly used along the first task.

The second most numerous category corresponded to those errors labelled as other, not belonging to any of the other 3 categories, with a total of 110 errors out of 405, which signified a 27.1% of the total. Nonetheless, a mighty justification for such a number may well lie in the fact that spelling errors have been included under this category and, taking again into account the technical nature of the writing, it may seem reasonable to expect such a figure of words incorrectly written since the presence of the rest of types is rather residual in most cases.

Other errors have been divided into the following types: addition of article, addition of plural marker, addition of pronoun, omission of the main verb, omission of progressive form, incorrect spelling, and addition of the subject. In the next table we can check the frequency of each type of these other errors.

Table 2. Number and percentage of other errors in task

Type of error	Number of errors	Percentage
Addition of article	13	11.8%
Addition of plural marker	4	3.6%
Addition of pronoun	1	0.9%
Omission of main verb	1	0.9%
Omission of progressive form	10	9%
Addition of subject	6	5.4%
Incorrect spelling	75	68.3%
TOTAL	110	27.1%

Source: Own elaboration

Having a look at the numbers, as we previously anticipated, the most common type of other errors referred to those cases in which technical words had been incorrectly written, with a total of 75 errors found, representing a 68.3% overall. This figure can be justified with the great number of technical words that they needed to use in this first task. And a representative example of this type of error could be the following: "It is a renawble source of energy with no fuel costs".

The next illustrative type of other errors in numbers was the addition of an article, whether it was definite or indefinite, when this was not needed with 13 errors identified which stood for a 11.8% of the total. For instance, we could include the next example: “Another type of the combustibles is biocombustibles”. It seemed that they tended to overgeneralise the use of the article, even when it was not required.

The third relevant type of other errors considering its frequency occurred when the progressive form of the verb (-ing) was omitted, something which happened 10 times, denoting a 9% in total. Under this type of error, we could include the next example: “Wind farms are produce more noise for people living near them”. Apparently, the correct use of progressive tenses was not fully attained by them in this initial task.

Another significant type of other errors in frequency referred to the incorrect addition of a subject, which was found 6 times altogether, denoting a 5.4% of the total. A clear example of such error can be the following: “Solar energy it's the best renewable energy for me”. This mostly happened in instances where the subject was impersonal and they tended to duplicate it.

The last but one type of other errors would then correspond to the incorrect addition of a plural marker. This occurred just 4 times along the task, which represented a 3.6% in general. And as an instance we could include the following: “I think it is not a serious problem as others disadvantages”.

Finally, the least represented types of other errors were both the addition of the pronoun and the omission of the main verb in a sentence, with just one case each, embodying a scarce 0.9% as a whole. The former type of error, the addition of the pronoun, could be found in the next sample: “The advantages are that natural energies they come from natural resources”. Meanwhile, as an example of the latter type, the omission of the main verb, we could include this one: “Water energy ___ not got any fuel costs”.

The third category following this comparative taxonomy in terms of frequency corresponded to those errors classified as *ambiguous*. Ambiguous errors were counted on a total of 85 errors out of 405, which represented a percentage of a 21% overall. Under this category, the following 7 types have been identified as it will be shown in table 3: inappropriate third person singular, inappropriate auxiliary, omission of article, omission of subject, inappropriate quantifier, inappropriate past, and omission of object.

Table 3. Number and percentage of ambiguous errors in task

Type of error	Number of errors	Percentage
Inappropriate third person singular	4	4.7%
Inappropriate auxiliary	2	2.3%
Omission of article	10	11.8%
Omission of subject	57	67.1%
Inappropriate quantifier	6	7%
Inappropriate past	2	2.3%
Omission of object	4	4.7%
TOTAL	85	21%

Source: Own elaboration

As table 3 shows, the most frequent type of ambiguous error happened when the subject of the sentence was omitted, something which happened 57 times along the task, representing thus an outstanding 67.1% of the total for this category of errors. This can also be considered as natural and, up to a certain point, foreseen since we tend to elicit the subject in cases of impersonal subject in Spanish. An example of this type of error can be the following: “Is a renewable energy resource with no fuel costs”.

Another repeated type of ambiguous errors referred to the omission of the article, regardless this was definite or indefinite, with a total of 10 cases detected, which made up a 11.8% overall. It was also frequent to come across an essay in which the article had been omitted as in these examples: “In contrast, it's difficult to produce ___ large amount of electricity” (indefinite article); “From all ___ energy sources we discussed about, I think that solar energy could be the best one” (definite article).

Significant was also the case of the use of an inappropriate quantifier happening in 6 different occasions, which signified a 7% in total. It was not uncommon to find out that an incorrect quantifier had been used. An example of this type of error could be the following: “... as well as destroying much species due to barrage”.

Other not too frequent ambiguous errors were, on the one hand, the use of an inappropriate third person singular and the omission of the object, on the other. In both cases, 4 errors were distinguished which stood for a 4.7% of the total. An example of the type of ambiguous error using an inappropriate third person singular could be the next one: “Fossil fuels generates a lot of electricity”. In the meantime, the following could be included as an example of the omission of the object: “There are different fuels and we can classify ___ according to their specific characteristics”.

And finally, the least numerous category in this task following this comparative taxonomy corresponded to *developmental errors* with 61 errors detected out of 405, which represented a little 15% of the total. Unlike other researchers predicted in previous studies, this category did not stand out for the first rank but, on the contrary, for

the last one as we have been demonstrating in this research.

Henceforth, under this category of developmental errors we included the following 6 types: omission of auxiliary, omission of plural marker, omission of third person singular, inappropriate part of speech, incorrect auxiliary, and omission of infinitive marker “to”.

Table 4. Number and percentage of developmental errors in task

Type of error	Number of errors	Percentage
Omission of auxiliary	2	3.2%
Omission of plural marker	17	28%
Omission of third person singular	3	5%
Inappropriate part of speech	32	52.4%
Incorrect auxiliary	3	5%
Omission of infinitive marker “to”	4	6.4%
TOTAL	61	15%

Source: Own elaboration

As can be seen in the previous table, more than half of the total number of developmental errors corresponded to the type of inappropriate part of speech with 32 errors detected, which denoted a 52.4% overall. This type of developmental error can be explained due to the incorrect formation of long complex sentences using technical vocabulary as they were asked for in this initial task. A clear example of this type of error could be the following: “Water energy there are no fuel costs”.

The second most numerous type of developmental errors referred to the omission of a plural marker with a total of 17 errors spotted along the task, representing a 28% of the total. The use of numerous nouns and noun phrases may also justify the presence of such a figure, as in the next case: “Three quarters of the electricity generated in the UK comes from power station fuelled by fossil fuels”.

The presence of the rest of developmental errors in this task was almost testimonial as could be seen in table 4, with 2, 3, or 4 errors at the most. Such number of errors, 4, was found in those cases when the infinitive marker “to” had been omitted, which stood for a 6.4% in total. The following could be included as an example of this type of error: “Its infrastructures are very expensive ___ generate water energy”.

Three errors were just found in two other types of developmental errors, omission of third person singular and incorrect auxiliary, representing a 5% overall. The use of an incorrect auxiliary when forming negative sentences or questions was scarcely found along the task although we did find the following case: “Solar panels doesn't work at night”. And so scarce was the omission of the third person singular as in this sample: “It’s difficult to build a wave machine that produce a large amount of electricity”.

Finally, the type of developmental errors with the least number of cases was the omission of an auxiliary form, something which happened just twice in the 55 essays examined, which embodied a 3.2% of the total. An example of this type of error would be the following: “Natural gas ___ not contaminate so much”.

5. Discussion of Results

Language learning, like almost any other kind of human learning, involves committing errors, at least up to a certain point. And recent research in applied linguistics emphasised the significance of students’ errors in second language learning. Since then, Error Analysis has become one of the major topics of concern in the field of second language acquisition research and quite a few studies have been released ever since.

Along the present article, the main categories of errors have been described and analysed following the classification proposed by Dulay, Burt, and Krashen in 1982 into 4 different taxonomies. This initial approach was continued tracing the sources and types of errors taking into account the comparative analysis taxonomy, one of the 4 different taxonomies proposed by these authors, who divided errors into 4 main categories: ambiguous, developmental, interlingual, and other errors.

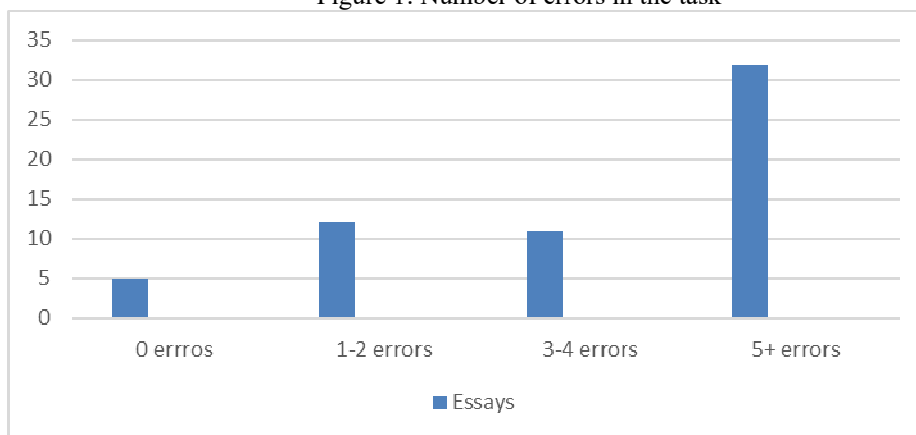
Although these researchers, and some others, put forward that the majority of errors committed by adult learners correspond to the developmental category, we have consistently demonstrated along the article that in our specific case, for undergraduate engineering students the most frequent category was interlingual in the task examined.

Let us recall back, at this point, that the main corpus of this research was the analysis of the 60 essays undertaken by undergraduate engineering students throughout the written task over the last two academic courses consisting in the description and explanation of different energy sources.

In terms of the global number of errors spotted, a total of 405 errors were detected along the task assigned, which gave us a result of 6.75 errors on average per essay. And having a close look at the number of errors found in the 60 essays, we made a distinction among those essays having no errors, those containing 1-2 errors, those comprising 3-4 errors, and those with more than 5 errors. Therefore, we found that the great majority of essays contained 5 or more errors, 32 essays, representing a 53.4% overall. The second representative group was that of essays having 1 or 2 errors with a total of 12 essays, standing for a 20% in general. The next type was formed by

those essays with 3 or 4 errors, 11 essays, denoting a 18.3% in total. Finally, the least representative group was the one formed by essays with no errors with just 5 essays encountered, meaning a scarce 8.3% of the total. These data can be easily understood in the following illustrative figure.

Figure 1: Number of errors in the task

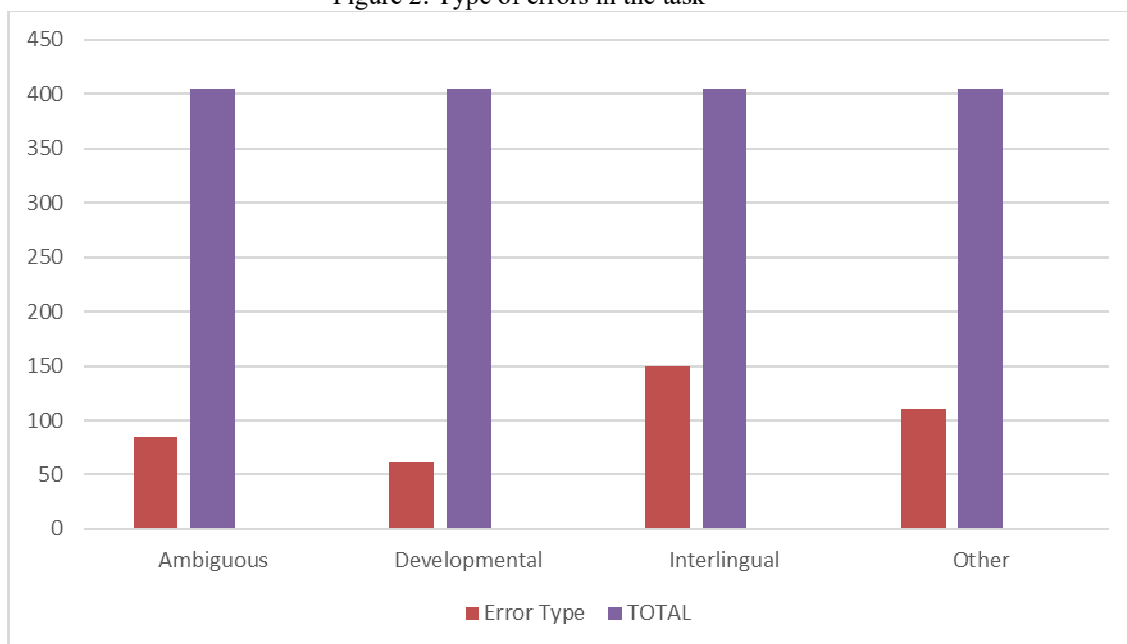


Source: Own elaboration

What the previous figure clearly shows us is that the highest percentage of essays was concentrated in the group having more than 5 errors. On the contrary, we found the lowest percentage amongst those essays which did not have any error. These data neatly demonstrate the challenge it supposed to these undergraduate students to carry out the written task properly.

More importantly, focusing on the different types of errors in the 60 essays, we proved along the research how the most frequent category of errors was not that of developmental errors but of *interlingual* ones. Contrary to the opinion of some linguists, we have demonstrated that interlingual errors was the category with the highest presence in the task with a total of 149 errors out of 405, which meant a 36.8% overall as can be seen in the figure.

Figure 2: Type of errors in the task



Source: Own elaboration

Concentrating now on the type of errors found in the essays, the figure reveals how the most frequent type of error encountered was that belonging to the interlingual category while the least recurrent error was the one belonging to the developmental category. In between, we can place the other two types of errors, other errors and ambiguous errors.

This might well be explained and justified given the nature of not only the writing examined but also the typology of students looked upon. Perhaps it actually makes a difference whether the students learning English come from a technical degree, undergraduate engineering students in our case, and English is not the goal of their studies but the means, or not in the number and types of errors committed.

Under this category, 8 different types were distinguished: addition of past tense, omission of preposition, addition of preposition, inappropriate noun phrase, verb-number disagreement, inappropriate demonstrative, inappropriate preposition, and inappropriate pronoun. The most recurrent type was the case of verb-number disagreement with 92 errors whilst the least recurrent one was that of the use of an inappropriate pronoun with just 2 error. Other repeated interlingual errors were the use of an inappropriate demonstrative, 17 errors, and the use of an inappropriate preposition with 16 errors.

The second group in terms of numbers was that of *other errors* with a total of 110 out of 405, representing thus a 27.1% overall. However, at this point, it should be clarified that most part of these other errors corresponded to the type of incorrect spelling as we previously mentioned through the article. Taking into account the technical nature of the task, it seemed inevitable to expect such an elevated figure of words incorrectly written. Otherwise, had it not been for this type, other errors would have stood up for the last position in the rank.

Other errors were divided into other 8 following types: omission of indefinite article, addition of article, addition of plural marker, addition of pronoun, omission of main verb, omission of progressive form, incorrect spelling, and addition of subject. And as anticipated, the most numerous type of other errors was that of incorrect spelling with 75 errors due to the scientific nature of the tasks. And the least frequent types of other errors were the addition of a pronoun, and the omission of the main verb with just one error in either case. Besides, the other types were not numerous either.

The next group was then *ambiguous errors*, with 85 errors out of 405, which represented a 21% overall. This group of errors was also divided into some other 8 different types: inappropriate third person singular, inappropriate auxiliary, omission of article, omission of subject, inappropriate quantifier, inappropriate past, omission of object, and inappropriate article. In this case, the most repeated ambiguous error was the case of the omission of the subject with 57 errors. Students faced some problems when they had to include an impersonal subject in the sentences. Meanwhile, the least repeated types were the use of an inappropriate past and the use of an inappropriate auxiliary, with just 2 errors detected in either casa.

Finally, the least represented group, contrary to the opinion of previous researchers, was that of *developmental errors* with a total of 61 errors, standing for a 15.1% as a whole. In this last group, 7 different types of developmental errors were distinguished: omission of an auxiliary, omission of plural marker, omission of regular past tense marker, omission of third person singular, inappropriate part of speech, incorrect auxiliary, and omission of infinitive marker “to”. And since students had some problems when constructing sentences in a logical and natural order, the most frequent type of developmental error was the inappropriate part of speech with 32 errors. On the other hand, the omission of the auxiliary was just found twice.

6. Conclusions

Error Analysis is a branch of Applied Linguistics which emerged in the 1960s to reveal that the errors that the learners did were not only due to their mother tongue but rather it also reflected certain universal strategies. This trend supposed a reaction to Contrastive Analysis that considered native language interference as the main source of errors in the field of second language learning. Since then, errors have received much attention from scholars and researchers who tried to analyse different errors made by language learners.

Consequently, procedures have been introduced analysing errors from very different and specific points of view. Many error taxonomies have been based on the linguistic item that is being affected by the error. These linguistic taxonomies classify errors according to the language component and the linguistic constituent that the error affects.

Errors can be classified according to different taxonomies. The current research presented here follows the classification proposed by Dulay, Burt, and Krashen in “Language Two” (1982), being the comparative taxonomy one of the major ones in order to classify errors. They firmly believed that an analysis of errors made by language learners could help us understand the process of language learning deeply. The classification of errors following a comparative taxonomy is grounded on the comparison between the structure of L2 errors and other types of constructions reflecting their native language (Spanish in our case). Therefore, this taxonomy includes four main categories of errors: developmental, interlingual, ambiguous, and other errors.

Therefore, the main objective of this paper was to classify the errors made by undergraduate engineering students in a public Spanish Polytechnic University over the last two academic courses when undertaking a written assignment as part of their continuous evaluation process. These students, whose age ranged between 18 and 25 years old, had an English level equivalent to a B2 as a result of the compulsory secondary education since most of them didn't have any contact with the English language other than the official one. However, a small group of these students had a higher level due to their attendance to private lessons or official English courses.

The task that these students had to undertake consisted of writing an essay about the use of alternative fuels stating both advantages and disadvantages, and finishing with a personal reflection as a way of conclusion. This topic was part of the contents for the English syllabus that these undergraduate students had to take along a

semester in their studies. Other topics studied along the course had to deal with mechanics, electricity, wind turbines, materials or robotics.

Focusing now on the written essays that the students had to deliver to this particular task over the last two academic years, a total of 60 essays were gathered and analysed in the present research following the comparative taxonomy by which errors were classified into the following four categories: ambiguous, developmental, interlingual, and other errors.

The results obtained have demonstrated that the most frequent type of error in the case of these undergraduate engineering students was that of interlingual category, reflecting the interference process with their mother tongue (Spanish). The influence and interference of Spanish was reflected in errors committed such as the addition of a past tense, the omission of a preposition, cases of verb-number disagreement, or the use of an inappropriate noun phrase, demonstrative, preposition or pronoun. This type of errors accounted for almost a 37% of the total of errors encountered along the task assigned, which clearly demonstrates their frequency and relevance.

The second most recurrent type of errors was those errors belonging to the other errors category, with a 27% of all the errors encountered in the task. Let us recall back that this category encompassed errors which did not fall into any of the other categories. Henceforth, we could find errors such as the addition of an article, a plural marker, a pronoun, or a subject, the omission of the main verb or a progressive form, and above all, the incorrect spelling of certain words. Given the technical nature of the task and the contents underneath, it was quite reasonable to expect to come across such a number of misspelling errors.

In the third place we found out those errors belonging to the ambiguous category, reflecting their lack of proficiency in the English language. This type of errors represented a 21% of the total of errors we came by in this written assignment. This category included errors such as the use of an inappropriate third person singular, auxiliary, or quantifier, or the omission of an article, a subject or an object. Undoubtedly, their poor English level regarding their writing skills may well be the reason for such a number of ambiguous errors.

Finally, the type of errors with the least presence in the task analysed was those errors which belonged to the developmental category, with just a 15% of the total of errors, reflecting their process of elaboration of proper English written constructions. Under this category we could find errors such as the omission of an auxiliary, a plural marker, the third person singular marker, the infinitive marker “to”, or the use of an inappropriate part of speech as a way of mastering the English language.

As a concluding remark, we can end up recalling back the main information gathered along the article. The corpus of this research has been the analysis of errors in 60 essays written by undergraduate engineering students in the last two years following the comparative taxonomy proposed by Dulay, Burt, and Krashen. In these essays, the most recurrent category of errors detected was that of interlingual errors, being the least one developmental errors. In between, we placed other errors in the second place and ambiguous errors in the third.

As far as the possible future research directions are concerned, we must bear in mind that this study has been limited in scope to observing and analyzing the errors made by engineering students doing a specific degree of engineering during the last two years, so its significance is limited. In the future, it could be extrapolated to more groups or branches of engineering students and even to other technical or technological careers in which technical English is taught.

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