Scientific articles

El diseño de estrategias pedagógicas para la enseñanza y el aprendizaje del idioma inglés como segunda lengua en la educación superior

The design of pedagogical strategies for teaching and learning English as a second language in higher education

O desenho de estratégias pedagógicas para o ensino e aprendizagem de inglês como segunda língua no ensino superior

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Resumen

El objetivo de la presente investigación fue diagnosticar las estrategias pedagógicas en la enseñanza de una "*segunda lengua*" (L2), que los docentes deben emplear para lograr un aprendizaje más eficiente por parte de los estudiantes de la Licenciatura en Ingeniería en Telemática, que cursan del primero al octavo semestre durante el calendario 2020A en el Centro Universitario de la Costa (CUCOSTA), perteneciente a la Red de la Universidad de Guadalajara. Para ello el diseño metodológico de esta investigación fue descriptivo y

transversal con un enfoque mixto (cuantitativo-cualitativo). La recolección de datos se llevó a cabo mediante el diseño de un instrumento en la que se estructuró en 135 preguntas, con una muestra por conveniencia de 79 estudiantes, seleccionados de un total de 257 de la institución anteriormente mencionada.

Los resultados de esta investigación respondieron cada una de las preguntas planteadas, así como a la hipótesis de trabajo; en la que se propuso capacitar a los docentes en el diseño de diversas estrategias metodológicas dentro de un modelo constructivista, enfoque pedagógico que prioriza el aprendizaje activo y significativo del estudiante, que sean adecuadas para el desarrollo de competencias por parte de los estudiantes en el aprendizaje de una segunda lengua que les permita desarrollar habilidades para alcanzar un mejor nivel de inglés, lo que se vea reflejado en una mejor preparación académica y además de fortalecer su perfil de egreso.

Palabras clave: Educación superior, enseñanza de segundas lenguas, estrategias pedagógicas, aprendizaje del inglés.

Abstract

The objective of this research was to diagnose the pedagogical strategies in the teaching of a "*second language*" (L2), which teachers should use to achieve more efficient learning by students of the Bachelor of Telematics Engineering, who attend from the first to the eighth semester during the 2020A calendar at the Centro Universitario de la Costa (CUCOSTA), belonging to the Network of the University of Guadalajara. For this purpose, the methodological design of this research was descriptive and transversal with a mixed approach (quantitative-qualitative). Data collection was carried out through the design of an instrument in which it was structured in 135 questions, with a convenience sample of 79 students, selected from a total of 257 from the aforementioned institution.

The results of this research answered each of the questions posed, as well as the working hypothesis; In which it was proposed to train teachers in the design of various methodological strategies within a constructivist model, a pedagogical approach that prioritizes active and meaningful student learning, which are appropriate for the development of competencies by students in learning a second language that allows them to develop skills to reach a better level of English, which is reflected in better academic preparation and in addition to strengthening their graduation profile.

Resumo

O objetivo desta pesquisa foi diagnosticar as estratégias pedagógicas no ensino de uma "segunda língua" (L2), que os professores devem utilizar para alcançar uma aprendizagem mais eficiente dos alunos do Bacharelado em Engenharia em Telemática, que estão cursando do primeiro ao oitavo semestre do calendário 2020A no Centro Universitário de la Costa (CUCOSTA), pertencente à Rede Universitária de Guadalajara. Para tanto, o desenho metodológico desta pesquisa foi descritivo e transversal com abordagem mista (quantitativo-qualitativa). A coleta de dados foi realizada por meio da elaboração de um instrumento estruturado em 135 questões, com uma amostra de conveniência de 79 estudantes, selecionados de um total de 257 da referida instituição.

Os resultados desta investigação responderam a cada uma das questões colocadas, bem como às hipóteses de trabalho; em que se propôs formar professores na concepção de diversas estratégias metodológicas dentro de um modelo construtivista, uma abordagem pedagógica que prioriza a aprendizagem ativa e significativa do aluno, adequadas ao desenvolvimento de competências dos alunos na aprendizagem de um segundo. idioma que lhes permite desenvolver habilidades para alcançar um melhor nível de inglês, o que se reflete em melhor preparação acadêmica e também fortalece seu perfil de graduação.

Introduction

For some time now, the importance of students, especially at the higher level, acquiring the specific linguistic skills necessary to develop in a globalized environment has been highlighted. These skills must be developed during their university education and are necessary to learn and master a " *second foreign language* " as a result of globalization in the productive sectors, as well as the academically important information that they must acquire for better preparation in their graduation profile. This phenomenon, which prevails in all

markets, is the main reason why " *English* " gained importance worldwide , considered the universal language of business .

Mexico, the United States and Canada make up the most important economic block in the world, where the majority of commercial transactions are carried out in " *English* ", which is why within organizations it has been established as a requirement that the profiles of all professionals have as a powerful tool the mastery of a second language, so that they can be hired in various positions according to their academic profile; in addition, it allows them the possibility of job mobility in other countries , where the mastery of this powerful tool that is a second language is a requirement .

Likewise, it should be emphasized that one of the main strengths that education for the 21st century must have is linked to the acquisition of a " *second language* " by higher level students; hence the importance of good educational practices in terms of the development of pedagogical strategies by teachers, which in turn constitute curricular scenarios in academic training units at universities as training activities and the interaction of the teaching and learning process where knowledge, values, practices, procedures and problems specific to the student's field of training are achieved , which occupy a central place in this research work .

For the above reasons, higher education institutions must be prepared for the new challenges that arise in the world of globalization, especially with international markets, which require a greater preparation of their graduates in their different disciplines; therefore, their mission must be reviewed and many of their substantive tasks redefined, especially those related to the needs of society in terms of learning and continuous improvement.

For this reason, it is necessary to improve the preparation of teachers both in their pedagogical training and in the mastery of a second language so that they in turn generate in their students at this level of studies the acquisition of this tool so important in today's world. In this sense, Barrón (2009) highlights that " *the teaching work is key in the quality of the teaching-learning process, emphasizing its role as facilitator"* (pp. 17-44) . For all the above reasons, it is clear that improving the quality of the teaching-learning process in any subject, especially in a foreign language , necessarily involves the transformation of the thinking and feelings of teachers. To this end, Higher Education needs the quality of the teaching staff, the programs and the students, the infrastructure and the university environment.

In relation to the above, the following questions arise: Which and what type of pedagogical strategies in the teaching of a " *second language* " (L2) should teachers use for

a more efficient learning by students of the Bachelor's degree in Telematics Engineering who attend the first to the eighth semester in the 2020A calendar of CUCOSTA and who acquire the necessary skills for mastery of " *English* "? Is lack of motivation or interest the cause of low achievement? In the case of teachers, is the instruction they receive sufficient? Does the lack of adequate vocabulary in their mother tongue by students influence their learning of the same in a foreign language? How do students learn? What learning strategies should students use to learn and understand a foreign language?

Furthermore, it is proposed as a research premise (hypothesis) that the methodological strategies used by teachers in each of the teaching-learning processes HAVE BEEN INSUFFICIENT to improve and strengthen the skills in students for learning a second.

Background and justification

It is worth mentioning, based on the way in which the research work was approached where the existence of an education focused on specific linguistic competences was assumed, which people use in a conscious and constructive manner within a democratic society . Learning a second language, such as English, is fundamental because it has currently been consolidated as the official language of business , in scientific advances and in technology. In this way, English as a second language (L2) plays a vital role in increasing opportunities for young university students. This language facilitates access to updated information both in the work and school environment . In relation to the work environment, in Mexico and in general throughout the world, bilingual professionals are in demand to cover the needs in international trade , export of agricultural products, international tourist services, education, as well as the creation of economic networks between different countries. In the school environment, individuals can learn and develop in various fields of knowledge. According to Crystal (2003), " *English has been consolidated as the lingua franca of business, science, technology and diplomacy. Mastering this language facilitates communication with people from different cultures and opens doors to international work and academic opportunities* " (Crystal, 2003, p. 217). " *Mastering this language allows access to a greater quantity and variety of information, which is essential for research and personal development* " (Graddol , 2006).

Theoretical-contextual references

In order to obtain each of the theoretical postulates of this research work, the available theories were taken into account regarding the use of learning strategies, which are carried out for the learning of oral and reading-writing skills, in a foreign language "EFL" (English as a foreign language by its acronym in English) and specifically, the English language, as well as its foundation based on communicative competence, framed in the communicative approach as the basis of the formative processes in the acquisition of a foreign language "EFL" .

In relation to learning strategies, these should be based on a methodological design with a pedagogical sense on the part of the teacher as a strategy that is flexible according to the needs of the students and can become part of the goals that are to be achieved. Therefore, a learning strategy should be supported by a series of techniques that aim to achieve the objectives it pursues in terms of the learning needs of the higher level student.

In this same sense, Weinstein and Mayer (1986) mention that " *learning strategies can be defined as behaviors and thoughts that a learner uses during learning with the intention of influencing his or her encoding process* " (Weinstein and Mayer, 1986, p. 315).

On the other hand, Ausubel (1983), Ausubel et al . (1991) and Ausubel (2002) mention that " *learning is considered significant when the student's knowledge is articulated with what he or she has obtained in a precise and not arbitrary manner"* (pp. 1-10). On the other hand, for Pozo (1999;2016; Mayer,1992; Butler,1995; Navas et al.,2000) " *Ausubel's theory on the processes of assimilation of new concepts through the construction of the same from the interpretation of problems of the context, produces significant learning with characteristics of contextualization and motivation"* (pp. 110-131).

Likewise, Castejón and Pérez (1998) add that " *human behavior is based on two (2) fundamental pillars: the first, which is related to the motivation to achieve success and the second, which is related to avoiding failure"* (pp. 170-184). As Beltrán (1996) states, " *strategies have an intentional character; they imply, therefore, an action plan, as opposed to the technique, which is markedly mechanical and routine"* (Beltrán, 1996, p. 394).

On the other hand, English language learning strategies are of utmost importance within the context of higher education for students to learn and master a second language, since it is essential within their academic profile when joining the productive sector and in any of the areas of knowledge and human development. Likewise, in the era of knowledge, it is necessary for all graduates of a bachelor's degree to master a second language; especially

in the era of globalization of the world of technologies within the international context, in which the language whose commercial, scientific, academic and economic domain is currently the English language. For the above reasons, it is mentioned that those who do not master a foreign language may face serious competitive disadvantages in various professional fields .

Regarding the learning of a second language, the psychological conceptualization has basically been applied in relation to the specific acquisition of a very important tool for the student, which is expressed as a competence that he or she must acquire during his or her academic career as part of his or her graduation profile in any of the degrees.

Thus, some authors have defined " *learning strategies as "specific actions, behaviors or techniques that students use, often intentionally, to improve their progress in learning, assimilating and using the second language""* (Oxford, 1993, pp. 18-22). The same author (2001, p. 166) more specifically understands learning strategies in general as those *"Operations used by the student to help the acquisition, storage, recovery and use of information, specific action taken by the student to make learning easier, faster, more enjoyable, more self-directed, more effective and more transferable to new situations".*

Lee (1995) describes how *"second language learners become more autonomous in the learning process through cooperative teaching strategies, improving learning outcomes and generalizing their use to other non-formal contexts"* (pp. 11-13). To this end, the same author mentions that " *situations are proposed that favor interaction between students, instructors and the analysis of the use of learning strategies "* (pp. 11-13).

In this same sense, it is necessary for students to acquire and learn a foreign language through a significant process according to their school and work context; therefore, it is necessary for them to understand the grammatical and verbal rules and, above all, to know how to express themselves in any of the situations that arise in their daily lives.

Students should also be more receptive to participating in activities proposed by teachers, which facilitates the natural language acquisition process.

> "Learning a language in a classroom, through the simulation of objects, situations and characters, is not the same as learning it as another member of the real world, with all the referential information necessary for a cooperative and effective speech act to occur" (Baralo, 2004: p. 29).

The role of the teacher becomes more important when it is known that language and culture are inseparable. His task thus covers aspects and interests of various kinds: the

influence of the environment and the language he teaches. The foreign language teacher knows the foreign language-culture, therefore, his performance must take into account certain standards that Zarate (1995: p. 71) indicates in the following lines when he points out:

> "By closely adapting his teaching practices to the local context, the teacher confirms the technical nature of his profession, not only by mastering the language he teaches, its references and its disciplinary field, but also by analysing the particular relationship between the cultural environment of his teaching and the language and culture he teaches."

For his part, Baralo (2004, p. 29) considers that " *there is sufficient evidence to show that an adult can learn a foreign language with native or very close to native competence, and, therefore, radically rejects any possibility of a critical period"* . Lightbown and Spada (2003) believe that " *there should not be an obsession with teaching a language at the earliest possible age, since, according to them, it is essential to take into account the objective that is intended to be achieved"* .

Among the challenges of the 21st century in the face of the demand for bilingualism and multilingualism, it is mentioned that *"Human beings have always communicated in other languages, so the teaching of these languages has had a long history; the need that human beings have to communicate and establish relationships between different cultures, traditions and customs"* (Howatt, 1984 pp. 1-17), has enhanced not only the bilingual but also the multilingual ability of many societies. In this sense, the development of the first methodologies for teaching a second language was not in charge of pedagogues, but of intellectuals, diplomats or globetrotters with a broad experiential and cultural background. " *The first methods showed an intrinsic relationship between the grammatical and conversational tradition; that is; the normative knowledge of a language must start from its global description, an aspect that the traditional teaching of grammar"* (Alcón, 2002 p. 39).

Currently, second language teaching methods are based on oral practice, based on the grammatical communicative function of the language; therefore, the use of language in oral and written production is important, which leads to improved communication and knowledge of a second language.

Methodology

"The methodological design of this research is descriptive and transversal" the descriptive research design was used since it sought to identify the prevalence of the results in a specific population sample and they are used by many scientific disciplines , especially the social sciences and psychology, use this method to obtain an overview of the subject or topic . " *In addition, a transversal design was used which consisted of a data collection method that lasts only one moment, in a single time and that is fundamentally used in various fields to analyze data at a specific time"* (Hernández & Mendoza, (2018), pp. 714).

In this sense, the strategies used by students to learn a foreign language at CUCOSTA were made evident . To achieve this, the level of English that these students have was analyzed. Upon entering the higher level, the student has at least 12 semester courses of learning a foreign language, which is mostly English, which he or she took during his or her secondary and high school education . Upon entering higher education, CUCOSTA teaches foreign language teaching as an optional option; however, to graduate, students must demonstrate knowledge of an intermediate level, according to the Common European Framework of Reference for Languages (CEF), it is a requirement for students . This fact has caused delays in obtaining a bachelor's degree, since many students have not been able to demonstrate competence in the language when taking the English Accreditation Exam (EXACRI) .

Type of study

The research work, as already mentioned, was descriptive, non-experimental, using this method, data was collected to answer the research questions; as well as the main question that guided the research work. In addition, it is transversal, since each of the characteristics of the object of study was described during a certain period, in turn, the quantitative methodology was used in which, through this method, data were collected to answer the research questions. The study was descriptive, non-experimental and transversal, with a quantitative approach that allowed analyzing the characteristics of the object of study in a specific period and establishing relationships between the data collected.

Instrument design

The questionnaire survey consists of 135 questions, including general data and specific questions about learning strategies and language skills. Closed questions and rating scales were used to facilitate quantitative analysis. The student population of the Bachelor of Telematics Engineering at CUCOSTA for the 2020A calendar is 257. A convenience sample of 79 students was used, consisting of 35 men and 44 women; Due to the accessibility of the participants and the logistical restrictions of the study and, according to their age, they are considered adults. According to Hernández, Fernández and Baptista (2014, p. 714), " *convenience sampling is appropriate in descriptive studies where accessibility to participants is a determining factor* . " *A questionnaire consists of a set of questions regarding one or more variables to be measured""* (Chasteauneuf, 2009, p. 217). " *It must be consistent with the statement of the problem and hypothesis"* (Brace, 2013 p. 320).

Validation of the instrument

The subjects to whom the survey was applied are students of the Bachelor of Telematics Engineering at CUCOSTA, with an age range between 18 and 25 years. They were previously informed that the questionnaire was intended to know the learning strategies they use and their treatment in the classroom . The questionnaire is structured as follows: I) General data; II) Learning of the English language; III) Courses received and IV) Learning strategies. No opposition to the application of the questionnaire was observed; on the contrary, a high degree of interest in improving their expectations for learning English as a foreign language "EFL" was observed. " *The validation of the instrument follows the methodological principles"* established by Hernández, Fernández and Baptista (2014) to guarantee the reliability and representativeness of the data obtained. According to Hernández, Fernández and Baptista (2014), " *convenience sampling is adequate when the accessibility of the participants is prioritized* . "

Inclusion and exclusion criteria **:** Students from the 2020A school year (January-June) were randomly included . Students who had studied English but did not want to participate in the study were excluded, as well as those who were absent during the questionnaire application period .

Universe and sample selection

In this study, only those students randomly selected who were in the halls of the Bachelor of Telematics Engineering at CUCOSTA and who agreed to answer the questionnaire on foreign language learning strategies "EFL" were considered. This procedure was carried out to ensure the accessibility and feasibility of data collection on foreign language learning strategies "EFL". The intervention was carried out during breaks and at the end of classes, on Mondays, Wednesdays and Fridays (from October 14 to November 15, 2019), and the work was completed in the 2020A calendar (January-June 2020).

Data processing

To process and classify the data for the research work, Microsoft Excel software was used to capture, organize and analyze the data obtained through tables and graphs. These tools allowed a clear visual representation and facilitated the interpretation of the results. Once the instrument was applied, the data was captured in tables and graphs using Excel, which allowed the research questions to be answered. *The use of Excel as a data analysis tool is common in descriptive research due to its ease in creating tables and graphs* (Microsoft, 2020).

Discussion of results

The discussion of results —according to Millán (2015)— " *consists of the management of facts and numbers collected to make appropriate decisions* " (pp. 261-265). As mentioned in the methodology chapter, the questionnaire is divided into two parts, the first is the general data of the student that allows to characterize him/her, for which they were asked to answer six items; the second part is the inventory of learning strategies, which in turn is divided into questionnaire A and B; the latter is subdivided into six parts.

The discussion analyses the learning strategies used by Telematics Engineering students at CUCOSTA to learn English as a foreign language (EFL), based on the results obtained from the applied questionnaire.

The results obtained are presented below .

Table 1. General data of the students.

Number of students	Sex		Age range			Years of experience as a language student.		
	M	F	18-20	21-23	24 o further	1-3	4-7	8 years or older and Other languages
79	35	54	27	34	18	41%	25%	34%

Source: Own elaboration.

Question No. 1: In the case of students, is the instruction they receive sufficient?

Figure 1. Experience as a language student.

Source: Own elaboration.

Another question that was generated in this section has to do with the perception they have of themselves as students. The results indicate that 50% of them consider themselves good students (from experts to good) and 38% consider themselves average students, only 12% consider that they are not good students (see Figure 1).

Does the lack of adequate vocabulary in students' mother tongue influence their learning of a foreign language?

Question No. 2: How do students learn?

Table 2. Courses received as a language student in the last 12 months.

No. of courses received	No. of students		Level
1	8	10%	A1
2	6	8%	A1
3	34	43%	A1
4	3	4%	A2
5	11	14%	A2
6	5	7%	B1
7	3	4%	B1
Introduction to French	2	3%	A1
Introduction to Italian	4	5%	A1
Bilingual student/ learned in the USA	3	4%	B2

Source: Prepared by the authors based on (CEFR) (2001).

Based on the above results, a table of equivalences between the common European framework, institutional "TOEFL" and the established levels of EXACRI was designed in order to explain the current levels of students in the Telematics Engineering degree at CUCOSTA. In this table, we have in the sample obtained that the majority of students enter CUCOSTA with a beginner and/or elementary level (see Table 2). The question is interesting because it is the students themselves who rate their ability; the results indicate that they consider themselves good learners of a second language. This characterization of young university students was necessary because the University brings together students who come from different educational systems and different levels of understanding of English.

Question No. 3: What direct or indirect learning strategies should students use to learn and understand a foreign language?

Table 3. Direct memory strategies.

Direct memory strategies	Often	In Occasions	Not often	Seldom	Never
You repeat words to yourself	50	17	6	5	1
You memorize words	28	32	16	2	1

Source: Prepared by the authors based on Oxford (1990).

Regarding the use of direct cognitive strategies, students most preferred the following:

- *"You listen to songs in the language you are learning, with 51%, in this activity it is implicit to notice a word and the second process is the recovery that guides the word to be remembered in a receptive form when you have a second encounter with it through listening, the student perceives the form again and recovers the meaning"* Nation (1990, p. 91).

- *"You watch videos/DVDs in the language you are learning, with 38%, which reflects that the student seeks the opportunity to re-encounter the words, this is a factor that is linked to incidental knowledge and they learn the words unconsciously"* Nation (2001 p. 417).

- The third most used strategy by students was " *you read magazines in the language you are learning* ", with 11%, according to Krashen (1988, p. 131) who states that " *people acquire language by understanding messages and receiving an i+1 input and thus, students will learn the words when they interpret the meanings; in addition, through reading one also has incidental knowledge that becomes vocabulary learning"* (see Table 3).

Table 4. Direct Cognitive Strategies.

Direct Cognitive Strategies	Often	In Occasions	Not often	Seldom	Never
You listen to songs in the language you are learning	40	17	13	7	2
You watch videos/DVDs in the language you are learning	30	24	12	7	6
You read magazines in the language you are learning	25	17	12	12	13

Source: Prepared by the authors based on Oxford (1990 pp. 128-132).

For the indirect metacognitive strategy the following results are found:

i) *"You try to use the language you are learning whenever possible, which had a prevalence of 34%; with this technique, the student uses implicit knowledge and learns unconsciously and at the same time coordinates his learning process because he focuses on specific activities to learn the foreign language"* Ellis (2005 pp. 141-172).

ii) *"You organize your study thinking about what you are going to learn each day/week/month, this statement was selected by 27% of the students and It tells us that he controls his own cognition and coordinates their learning process by applying functions such as focusing, grouping, planning and evaluating"* Ellis (2005 pp. 141-172) (see Table 4).

Table 5. Indirect Metacognitive Strategies.

Indirect Metacognitive Strategies	Often	In Occasions	Not often	Seldom	Never
You try to use the language you are learning whenever possible.	27	23	16	9	4
You organize your study thinking about what you are going to learn each day/week/month	21	15	23	11	9
You rehearse what you are going to say first.	16	30	16	14	3

Source: Prepared by the authors based on Oxford (1990 pp. 128-132).

Regarding the use of the indirect social strategy, the following was found:

i) "Consulting the dictionary to find out the meaning of terms you don't know registered a 48% frequency of use, which indicates that students manage information about new words using references such as the bilingual dictionary and at the same time the first process of noticing the vocabulary is involved , which is noticing the form *through the need to understand the meanings of words so that the student pays attention to the form and, in the same conscious way, to learn them* " Nation (2001 p. 417).

ii) "Interacting with someone via email or chat was the second most prevalent statement with 43%. This reflects that students rarely use this foreign language learning strategy "EFL" (EFL, acronym in English) due to its lack of technological availability. iii) Practice with a native speaker was the third most frequent option 30% According to Oxford (1990, pp. 128-132) " *in this case the student interacts with native speakers with the purpose of practicing English as a foreign language"* (See Table 5).

Table 6. Indirect Social Strategies.

Indirect Social Strategies	Often	In Occasions	Not often	Seldom	Never
You consult the dictionary to find out the meaning of terms you don't know.	38	27	7	4	3
You practice with someone via email or chat	34	21	10	7	7
Practice with a native speaker	24	11	14	10	20

Source: Prepared by the authors based on Oxford (1990 pp. 128-132).

In relation to the 7 least used awareness or sensitization strategies of the questionnaire "A" and returning to Oxford (1990 pp. 128-132) the following was found (see Table 6).

"DIRECT MEMORIZING STRATEGY: "You repeat words in front of a mirror" with 14%, which indicates that the student rarely repeats out loud in front of a mirror to memorize words."

"COGNITIVE STRATEGY: You write new words several times in order to remember them, "you associate new words in the language you are learning with one in your mother tongue", "you read newspapers in the language you are learning", with 20%, all of them, the above reflects that students write the new word they want to learn only once and do not use the mnemonic rule when associating the new word, that is, they do not relate the word they want to remember with an image or acronym. In the same way, students do not read newspapers in English as a foreign language perhaps because of the difficult access to them".

"Indirect metacognitive strategies: you record yourself on a cassette to see how what you say sounds, with 10%. This indicates that students rarely use this strategy due to the lack of access to this type of technology. You periodically review what you did in class with 17%, in this it is observed that they do not plan their study of the recently learned English words."

"SOCIAL INDIRECT STRATEGY: Practice with a friend with 25%, indicating that the least popular practice for managing information is socializing and interacting with a friend using the foreign language."

Table 7. Less used awareness strategies.

	TO Slight	On occasions	No to slight	Seldom	Never
Direct Memory Strategies					
You repeat words in front of a mirror	11	27	8	10	23
Cognitive					
You write the new words several times in order to remember them.	16	25	17	14	7
You associate the new words of the language you are learning with some mnemonic rule	16	26	18	13	6
You read newspapers in the language you are learning	16	14	12	12	25
Indirect Metacognitive Strategies					
You record yourself on a cassette to see how what you say sounds	8	15	13	12	31
You periodically review what you did in class	14	20	27	12	6
Indirect Social Strategies					
Practice with a friend	20	22	16	12	9

Source: Prepared by the authors based on Oxford (1990 pp. 128-132).

The above characteristic defines heterogeneous educational levels in the understanding of English, so it was necessary to ask about courses received and according to the analysis of the data these indicate that 43% of the students have received 3 language courses, and have a beginner level A1, 16% of the students have an elementary level A2, 10% of the students say they only know isolated English vocabulary, in addition 8% of the students have only taken 2 English courses and have a basic beginner level A1 according to the Common European Framework of Reference (CEFR, 2001), which shows us that the student recognizes very basic words and expressions usually related to themselves and their family environment; in the same way 7% of the students have an intermediate level - B1 where, they understand the main ideas when the speech is clear and normal and deals with everyday issues that take place at work, at school, during free time, etc. Students can understand the main idea of many radio or television programmes dealing with current affairs

or issues of personal or professional interest, when the articulation is relatively slow and clear. 4% have an upper elementary level A2, where they understand the most common phrases and vocabulary and are able to grasp the idea of short, clear and simple announcements and messages. The other 4% have an upper intermediate level B2, where the student is able to understand long speeches and lectures and even follow complex lines of argument, provided the subject is relatively well known. Students can understand almost all television news and programmes on current affairs. They can understand most films in which the language is spoken at a standard level. However, none of the students have an advanced level (see Table 7).

Table 8. What I do to listen and understand more.

	Ask	Yeah	Somehow	No
1	I listen to the radio in the foreign language I am studying.	22	12	45
2	I watch the news in the foreign language I am studying.	38	20	21
3	I watch some program on satellite TV where the language I am learning is used	58	8	13
4	I'm going to watch movies in that language (English).	61	10	8
5	I try to listen to native speakers.	46	19	14
6	I go online to listen to something in a foreign language	46	18	15
7	Add anything you do in order to listen and understand more; Only 5 students answered I listen to music in English, and 73 of them did not answer.			

Source: Prepared by the authors based on Nation (1990).

1. To clarify what I do to understand what I hear, 6 actions were presented:

   - I try to focus on the most important words, with a 75% preference,
   - I pay special attention to what seems relevant and pay attention to the speaker 's tone and intonation. 67% preference.

   " *By using these strategies the student develops intensive listening* " Harmer (2011 p. 128) with the purpose of paying special attention to the meaning of words and their context (see Table 8).

Question No. 4: Is lack of motivation or interest the cause of low achievement?

Regarding the reason why they decided to study English as a language, it is observed that 57% of the students have taken English as a foreign language courses motivated by academic demands, and 11% of them have only done so out of personal interest ; however, 10% of the students indicate that only their intrinsic motivation led them to take courses, and the other 10% refer to the demands of their parents.

Table 9. Why did you start learning another language?

Reason	No. of Students	%
Academic requirement	45	57%
Personal academic interest	9	12%
Interest in languages	2	2.5%
To travel abroad	2	2.5%
General knowledge	1	1%
None	8	10%
From Preschool	1	1%
To be a teacher	3	4%
Parents' Demand	8	10%

Source: Own elaboration (2019).

As can be seen, most of the students are young novices with some experience in learning a second language, having taken at least 12 courses, and in general these are by academic choice and not by the simple desire to learn it, the above alerts to the possibility of a lack of motivation in learning, coupled with the lack of student mobility to practice the language.

Answer to the main question

In this section, the main question will be answered: Which and what type of pedagogical strategies should teachers use in teaching a second language (L2) for a more efficient learning by students of the Bachelor's degree in Telematics Engineering who are enrolled from the first to the eighth semester in the 2020A calendar of CUCOSTA and who acquire the necessary skills for mastery of English? From this result, it was found that the strategies that students use to 'know' English as a foreign language are:

1. Strategies for "knowing" English: The most favored strategies for "knowing" English include repetition and associating words with sounds or images (see Table No. 4).

2. Metacognitive strategies: It was observed that students use metacognitive strategies, such as practicing the language whenever they have the opportunity, which indicates an attempt to regulate and control their learning.

3. Direct cognitive strategies: Regarding the most used vocabulary learning strategy: it allows them to create a mental image or photograph of the new word with 78%, and by carrying out this action the student has his/her first encounter with the word and notices its shape, he/she is aware that this strategy is the most effective for his/her vocabulary learning, thus, this will provide him/her with the acquisition of the second language in the long term.

4. Indirect Social Strategies: Regarding the development of listening comprehension, students used more the strategies of watching a movie in English and concentrating on the words they considered most important. In this way, students show us how through having contact with the target language, they learn through implicit knowledge outside the classroom context and direct instruction. Students, by combining the strategies, have a quality in the use of them.

5. Indirect Metacognitive Strategies: According to the results of the development of reading comprehension, the student does it through various activities, to achieve this goal, I read the text several times to understand it as best as possible, I look at the drawings and what appears below them, I try to understand the foreign language without translating all of them with a 75% frequency of use, which indicates that the student reads to understand details, predicts the meanings and tries to appropriate them. The above shows us that students understand basic texts in the foreign language.

6. Productive strategies: On the other hand, productive strategies were identified, such as oral production and writing. According to the results, in the development of oral production, when the student interacts with a person who speaks English and does not understand, he asks him to repeat what he said (77%), I ask him to speak more slowly (71%), I repeat new expressions to myself (63%). These survival strategies in which students acquire the skills in

the use of a second language within a work environment show us that students do not understand much of what the other says during the interaction and they do not have a fluent oral production of the language and the level of English is basic.

In the same way, in the development of written production, the student rereads what he writes to see if it is correct (76%), asks someone for the word or expression he wants to write (72%), uses the dictionary or a glossary (66%). Through these results we can realize that the student does not produce the language fluently in written form, because he has many doubts, the need to learn meanings, negotiate them with other people to confirm them. Likewise, he does not have the necessary vocabulary available when he needs to write it, which allows us to deduce that his level of English is low. The use of references to understand the meanings is very popular among them in order to have a learning in which students can interact in any circumstance of daily life in which they have to express themselves in a second language, so it is necessary that during the academic career the teacher strengthens all those learning strategies that allow the undergraduate student a better communication through a second language as a tool that is effective when it is required to be used.

Conclusions

This section will answer the research premise (hypothesis) which states that Pedagogical Training and the use of various methodological strategies by teachers within the teaching-learning process have been insufficient to improve the quality of education and strengthen the skills of the Bachelor's Degree in Telematics Engineering that are taught from the first to the eighth semester in the 2020A calendar of CUCOSTA in learning a second language.

The information presented in the previous paragraphs allowed us to determine the level of English of the students and compare it with the graduation profile of the EXACRI exam, which establishes the disadvantage and weakness with which students graduate from the different CUCOSTA degrees and at the same time we fulfilled objective three of our research.

Cognitive strategies: It is concluded that only 15% of students progress in their learning through these strategies; those who do prioritize vocabulary learning and the use of cognitive strategies when they know a new word, relate it to an image of the meaning, repeat it and associate it with others to memorize them in the short term Nation (1990, p. 91).

Metacognitive strategies: In the same way, to apprehend and appropriate knowledge, they use metacognitive strategies to regulate and monitor the use of language in productive skills when interacting with others. Regarding the understanding of the language as a foreign language, the student does so through both types of knowledge: implicit and explicit , Ellis (2005, pp. 141-172).

Direct Cognitive Strategies: One of the strategies used by teachers to help students improve their English as a second language is to listen to music, watch videos, and use dictionaries to learn the meaning of the words that the undergraduate student will be learning, as well as the meaning of the same Oxford (1990 pp. 128-132).

It is concluded that these are the students who can pass the EXACRI exam, which, compared to the MCE, requires a B2 level, which implies an intermediate level of English, and, compared to the TOEFL exam, would be equivalent to 550 points. It also shows us that, as the considered theorists mention, these strategies make the English learner (in our case) an independent, creative student who manages his or her own learning. On the other hand, the rest of the sample (85%) use direct memorization strategies with the combination of the use of the same for different purposes (comprehension and/or production of the language and vocabulary learning) without the appropriate use and frequency. This has resulted in students only reaching an elementary and basic level of English, making it necessary for them to learn other types of taxonomies to develop the skills so that they can reach a pre-intermediate level of English.

According to the results of the research and the requirements of the EXACRI exam, only a minority of students have been able to meet and will meet the accreditation requirement of this exam. This has two fundamental consequences: the student fails to graduate and, with reference to the Institution (CUCOSTA), it has caused a decrease in the terminal efficiency indicator in terms of the results in learning a second language.

Contributions to future lines of research

As future lines of research, English is of great importance as a language in business, science and technology; therefore, it is necessary to design a proposal to train teachers in the design of methodological strategies under a constructivist model, which are pedagogical currents in which tools are provided to university students so that they are able to build their own knowledge, the result of previous experiences obtained in the environment that surrounds them within a global context. Strengthening those that allow them to develop skills

that are appropriate for the learning of a second language by higher level students, and that develop skills that allow them to achieve. " *These methodologies should promote skills that allow students to reach an advanced level of English, which will be reflected in better academic preparation"* Oxford (2001, pp. 359-366). Since English is currently the official language in business, scientific advances and technology, its mastery is essential to access updated information in the work and school environments . Furthermore, the purpose is to play a fundamental role in increasing opportunities for young university students (Crystal , 2003).

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