

Learning English as a Second Language in children from low socioeconomic level

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Abstract. The learning of English as a second language is a topic of great importance in the Mexican educational context, and language education programs begin in primary education from an early age. This research considers neuropsycholinguistic theoretical backgrounds, and its main objective is to determine, through a quasi-experiment, whether a treatment based on 80% practical exercises and 20% theoretical exercises can improve the average grades of a group of elementary-level students, also identifying the influence of certain factors on the learning of the English language. The main evidence obtained inferentially through a hypothesis test demonstrated that the proposed treatment is effective, and significant correlations are provided that, when interpreted, allow the identification of factors that positively and negatively influence the learning of English.

Keywords: English as a Second Language, Psycholinguistics, elementary education, child, low socioeconomic level, language and literacy.

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Introduction

There are various blockages that affect the learning of English as a second language (ESL) in public school students, the main aspects are socioeconomic both in the educational system and in the family context (Bonilla and Díaz, 2019; Bocchio et al. al., 2020; Getie, 2020). These factors are related to self-esteem and how it affects learning and behavioral attitude (Gardner and Lambert, 2019). Motivation or self-determination to learn and the opposite is derived from this factor, which in ESL is called language anxiety (Luria et al., 2021).

Other important aspects are malnutrition, situations of abuse and sociocultural aspects, which, enhanced by a learning methodology based on nativist and behavioral theories, coerce the neurocognitive capacity of learners, especially in late learners who did not receive a bilingual education in their early years (Moreta et al., 2019; Ainamani et al., 2021; Singleton and Leśniewska,

[2021](#); [Telep et al., 2021](#)). Neurolinguistics in education invites us to question and rethink the psychoaffective and neurobiological conditions that would limit the acquisition of a second language (L2). The main cognitive and emotional aspects involved are: (1) Broca's area is responsible for area is responsible for speech production; (2) Wernicke's area corresponds to speech comprehension and is related to semantic and lexical deficits; (3) The limbic system, also known as the emotional brain, regulates emotions; (4) Gray matter: is the network of cell bodies that process and release new information through the axons of the white matter, which controls: movement, memory, sensory perception, speech, self-control and decision making; and (5) White matter: it is the nerve fiber composed of myelinated axons that coordinates communication between gray matter and other areas of the brain ([Mercadante and Tadi, 2021](#); [Thau et al., 2021](#); [Li et al., 2022](#)).

Neuroscience has found that learning ESL offers cognitive benefits to humans. Furthermore, magnetic resonance imaging (MRI) studies reveal that neuroplasticity and neuronal activity improve in late language learners ([Legault et al., 2019](#)). These late learners also show an increase in cortical thickness and gray matter volume, to which [Bubbico et al. \(2019\)](#) even suggest that they can implement low-cost training that improves neural connectivity and global cognition.

According to [Gidon et al. \(2020\)](#) and, [Romero and Vázquez \(2021\)](#), brain modularity encompasses multiple interconnected neural networks independently of specific functions and mental operability depends on these interconnected connections. In other words, the brain can be considered as a subsystem of interrelated systems ([Weht et al., 2022](#)), where emotions significantly influence learning and cognition, since the brain evaluates the stimuli it receives through the senses in language learning ([Plass and Kalyuga, 2019](#); [Mullins and Sabherwal, 2020](#)).

Linguistic anthropology is related to ESL, as well as the study of the language, culture, habits, customs and values of a society ([Ramírez, 2020](#); [Valdés, 2020](#)). The importance of not reducing an individual to monolinguals is highlighted and the valuation of linguistic diversity is promoted ([Clouet, 2018](#); [Budiarta, 2020](#); [Goodwin, 2020](#)), being in a certain way against the critical period hypothesis, which refers to children's neurological advantage in acquiring a second language during childhood. The age limit of six years presented in this hypothesis is questioned, highlighting instead the importance of cognitive maturity in learning ([Gardner, 2019](#); [Singleton and Leśniewska, 2021](#)).

Language anxiety in L2, low self-esteem and lack of motivation can generate insecurity and disinterest in the student, which can result in a psychological and mental block that impedes cognitive and aptitude development ([Hyseni and Hoxha, 2018](#); [Gardner and Lambert, 2019](#)). In this sense, intrinsic motivation is essential to address and solve various academic insecurities ([Murayama, 2019](#)).

Correspondence between theoretical foundations and research activities

Below, the activities carried out on each of the five days that the intervention lasted are described. They are indicated in the theoretical framework section because they are accompanied by the conceptual theoretical foundation that supports each of the exercises as part of the experimental treatment:

First session

Kinesthetic activities, such as the game of hopscotch, were carried out in an open space located at the entrance to the room. Memory was also stimulated regarding the order and grammatical structure to formulate questions, answers or short sentences ([Yanez-García, et al., 2021](#); [Buzsáki et al., 2022](#)). Each child had to jump on boxes that had a logical sequence of colors. This technique is known in linguistics as the sentence production task and seeks to improve students' syntax ([Van den Branden, 2016](#); [Loewen & Philp, 2018](#)).

Neuropsycholinguistic suggests that kinesthetic activities can benefit learning. Physical movements increase blood and oxygen flow to the brain, improving attention, memory, and cognitive processing ([Codd et al., 2020](#)). This type of recreational activities is appropriate for children between 11 and 12 years old, since they are in a stage of development where they seek new experiences and exciting challenges that contribute to their individual growth and development ([Philpo, 2018](#); [DeLuca et al., 2019](#); [Gómez, 2021](#)). Physical activity and movement can improve student learning. Additionally, visual-motor coordination can help improve students' memory, attention, and concentration ([Codd et al., 2020](#); [Charfe et al., 2020](#)).

Second session

Sentence construction was combined with visual arts ([Murayama, 2019](#); [Shafazhinskaya et al., 2019](#); [Desmet and Fokkinga, 2020](#)) through a set of illustrated cards to introduce students to new vocabulary related to professions. Linguistic information was presented through processing and applying the information effectively ([Damanik, 2019](#)).

By using flashcards to teach the basic structure of a sentence and how to make changes to express different ideas, students can associate words with images, thereby improving their memory and comprehension ([Damanik, 2019](#)). It is important to note that the degree of improvement can be influenced by various factors, such as the frequency of use of this technique and the level of previous skill ([Chomsky, 2019](#)).

In another activity on the same day, children were asked to draw themselves and write affirmative sentences in the simple present tense around the drawing, using phrases such as I am an architect or adjectives with positive qualities such as I am smart. Then, using the sentence chain technique, we worked on changing negative self-perceptions into positive ones, based on the drawing made ([Gurney, 2018](#); [Gardner and Lambert, 2019](#)), promoting intrinsic motivation ([Murayama, 2019](#); [Luria et al., 2021](#)).

The aim was to motivate children to pursue their dreams related to professions, based on motivation theories that highlight the human need to transcend and feel fulfilled ([Desmet and Fokkinga, 2020](#)), emphasizing Gardner's socio-educational model, which highlights the importance of affinity and taste for the language ([Hegedüs, 2020](#); [Oakes and Howard, 2022](#)).

This reflection and self-analysis allows you to identify and understand your own emotions in relation to your self-esteem, as well as your professional and academic future ([Gurney, 2018](#); [Hyseni and Hoxha, 2018](#)). After reflecting, they were asked to share their thoughts and feelings about their self-image, allowing them to better recognize and understand how they perceive themselves in

terms of achievements and goals ([Bacon and Kim, 2018](#); [Gardner and Lambert, 2019](#); [Hegedüs, 2020](#)).

By allowing children to draw themselves and write affirmative sentences with positive adjectives, we seek to build a positive image of themselves and their abilities ([Gurney, 2018](#)). Likewise, asking them about their drawing and their sentences encourages the positive development of their self-awareness and their ability to express themselves verbally in a social context ([Charfe, 2020](#); [Schunk and DiBenedetto, 2020](#)).

Third session

The task was reviewed, leading to the construction of sentences and the initiation of speaking exercises that encouraged students to think critically and formulate sentences and questions in the present tense. This was done using cards with vocabulary related to various professions, such as I want to become a pilot ([Philpo, 2018](#)). The purpose of this activity was to develop students' ability to produce grammatically correct and coherent sentences ([Van den Branden, 2016](#); [Loewen & Philp, 2018](#)).

Fourth session

The coconut-eating origami game, of Japanese origin, involves folding a square piece of paper to create a mouth-shaped structure with four flaps or tabs. The mouth opens by lifting one of the flaps located at the corners of the paper. This activity aimed to detect fine motor skills and hand-eye coordination in students and is useful for developing mathematical skills, since it involves the sequential and logical construction of complex mental representations, similar to those required in grammar ([Acero, 2020](#); [Charfe et al., 2020](#)).

This game contributes to exploring the folding patterns and geometry of the paper in greater detail and requires attention and concentration to follow the instructions and complete the task correctly ([Buzsáki et al., 2022](#)), involving the coordination of different patterns, the sequencing of actions and the manipulation of physical objects, making it a complete activity to provide comprehensive teaching ([Gardner, 2019](#)).

In the grammatical field, the objective was to stimulate the retention of syntax by relating the subject to the verb that was in the fold of each corner of the origami ([Acero, 2020](#)). The students interacted in pairs and alternately played the game Guess what verb is? guessing the verb corresponding to the subject indicated by their partner. With this activity, we sought not only to improve grammatical skills, but also to encourage interaction between students and teamwork ([Hasson et al., 2018](#)).

Pair work promotes team collaboration, which is especially useful for those who may feel uncomfortable expressing themselves in English in a more formal or academic setting ([Tridinanti, 2018](#); [Chen and Yu-Jung, 2019](#)). This in ESL is called language anxiety ([Hyseni and Hoxha, 2018](#); [Gardner and Lambert, 2019](#)). Therefore, this activity adopts a playful and cooperative approach that stimulates students' memory and enhances their understanding of syntax ([Acero, 2020](#)).

On one of the flaps of the origami eats coconuts, the children had to write the pronouns in four categories: First person (I), second person (You, yours), third person (he, she, it) and plural (we, you, they). When they lifted the fold, they had to write the verb that corresponds to the verb to be

(am, is, are), stimulating memory of what they had learned and improving syntax by playing in pairs. The children had to ask their partner to relate the indicated pronoun with the correct verb, both to ask questions and to create short sentences ([Gómez, 2021](#)).

Pedagogically, the combination of this type of games favors cognitive development, since students acquire skills such as fine motor skills, visual-motor coordination and the manipulation of shapes and objects in space, asking to be a fun and attractive way to involve children in language learning ([Ferreira, et al., 2019](#)). If they made a mistake, the student could repeat the question, consult the answer on the origami or practice with another student, as used in mingle games ([Philpo, 2018](#)). In addition, the game encourages concentration and memory as it is a guessing game.

Fifth session

Grammar exercises were carried out in groups, putting into practice what was learned during the week ([Philpo, 2018](#)). It should be noted that all students actively participated in this activity, practicing the use of personal pronouns in English, according to their level of knowledge and skills. Dichotomous questions (YES/NO) were asked using the verb to be in the simple present tense ([Gómez, 2021](#)). At the end of the day, and as the end of the experiment, the post-test was administered.

Methodology

The present research has a quantitative, applied approach, it is quasi-experimental, since the independent variable was intentionally manipulated to measure its effect on the dependent variable without random assignment of the participants or control group. The form of the research is correlational, using a deductive method.

Description of measuring instruments

Data collection was carried out using two instruments: (1) Initial diagnostic instrument, applied only once; and (2) Instrument to evaluate the pretest and posttest, applied twice, at the beginning and end of the research.

- a) Diagnostic instrument. This instrument is an adaptation of the Attitude/Motivation Test Battery (AMTB): International ATMB Research Project to measure motivation and attitude toward English language teaching of a foreign language ([Gardner, 2004](#)). It was originally developed by Gardner and educational psychologists. at the University of Michigan in the 1970s. The original test consists of 106 Likert-type questions with response options ranging from 1-6. For this research, 25 questions were chosen and the scale was changed to a response range of 1-10, since, in the evaluation system in Mexico, the lowest score is one and the highest is ten.

The composition of the diagnostic instrument, together with the methodological matrix of objective questions and hypotheses, was validated by experts and researchers in linguistics, taking into account the nature of the experimental treatment applied. A letter of informed consent was also included for the teacher in charge of the group, as it is an intervention in children, approved by the authorities of the educational establishment. In the pilot test of the instrument, a Cronbach's Alpha Coefficient of .920 was obtained, which suggests that the items measure the same construct.

The AMTB is capable of measuring various socioeconomic factors, such as the quality of language immersion, motivation, and students' perception of the usefulness of English as a foreign language (Getie, 2020; Luria et al., 2021). It also allows us to identify possible factors that influence poor academic performance, such as lack of sleep, parental support in schoolwork, early exposure to English in the family environment, and insecurity when speaking in class (IRIS Center, 2022). Likewise, it includes questions that generate cognitive dissonance in students to detect contradictory attitudes or motivations (Hewett, 2023).

- b) Pretest y posttest. This instrument consists of 20 questions adapted to be answered by the children described in the study, the first 12 questions are multiple choice using 4 texts and the last 8 questions are multiple choice with 4 images. The instrument was also included in the validation by experts, who indicated some adjustments. During the application of the pilot test it was not necessary to make any changes to it. It is important to clarify that it was applied without any modification in the pretest and posttest in the search for a reliable evaluation that would allow the hypothesis test to be carried out.

Characteristics of the intervention

The intervention was carried out in a primary school in the city of Chihuahua, Mexico, located in a sector of the city considered to be of low socioeconomic level. The school has 334 students and 28 teachers distributed as group leaders, directors, physical education and special education. In particular, this institution is distinguished because it was attached to a national English language teaching program since 2022 (which was temporarily interrupted due to the COVID-19 pandemic).

The intervention was carried out in five days and focused on improving syntax as part of a holistic and multidisciplinary education (Gardner, 2019; Saavedra, 2021), developing linguistic skills in learning a second language, carrying out activities that involved 80 % practice and 20% study through tasks or exercises in class (Shemesh, 2021). The activities described were applied to a group of children who were in the fifth year of primary school, whose age range was 11 to 12 years old.

Analysis of results

The analysis is divided into two large sections, the first of which presents the results of the initial instrument; The second presents the analysis of the instrument to evaluate the pretest and the posttest.

Analysis of results of the initial instrument

Descriptively, it was found that "Learning English is important because I can communicate with people from other countries." obtained the highest rating, with a value of 9.06. On the other hand, it was found that the item "They teach me English at home." obtained the lowest score, with an average of 3.97. Table 1 shows the averages ordered according to the grades obtained.

Table 1. Averages obtained in the 25 items of the instrument

Item number	Item	Mean
12	Learning English is important because I can communicate with people from other countries	9.06
4	I arrive punctually at school	8.71
5	I am in good health	8.52
13	I would like to speak and write English perfectly and naturally	8.47
16	I love English classes, and my teacher inspires me to learn	8.23
7	I pay attention in class	8.13
17	I study English because it is important for my education and future	8.03
15	I want to learn English; it is something useful and a priority in my life	7.97
3	I usually pay attention to the explanation in class	7.84
8	I usually bring all my school supplies	7.77
1	I get enough sleep	7.45
18	I am interested in practicing English inside and outside of classes	7.42
2	I am motivated during classes	7.32
14	I have confidence and feel secure if I have to answer a question or participate in class	7.23
11	I would like to have many English-speaking friends and learn about their culture	7.23
9	I have breakfast and/or usually bring a nutritious snack for recess	7.2
20	I am more interested in listening to songs in English than in Spanish	6.8
6	I like it when an adult instructs me to do homework	6.45
22	I would feel confident if I had to speak on the phone in English	6.4
19	My parents encourage me to learn English	6.27
23	I don't know why other students feel nervous about speaking in class	6.03
21	I find it easy to understand everything I hear and see in English	5.83
10	At home, they help me with my homework	5.3
24	My parents know English, and I interact with them	4.7
25	They teach me English at home	3.97

Correlation analysis

An analysis was performed using the Pearson coefficient, which varies between -1 for a perfect negative correlation and 1 for a perfect positive correlation. Table 2 shows only the correlations above .60, finding that all of them have been marked with two asterisks, which indicates that they are highly significant. Regarding the Pearson correlation value (r), the first two variables show a very high correlation, (.800) while the rest present a high correlation ranging from .613 to .750.

Table 2. Variables correlated in English learning motivation

Correlated Variables	r	Sig
I want to learn English; it is something useful and a priority in my life	0.80	.000**
I would like to speak and write English perfectly and naturally		
I find it easy to understand everything I hear and see in English	0.75	.000**
I am interested in listening to songs in English rather than in Spanish		
I pay attention in class	0.74	.000**
I usually pay attention to the explanation in class		
I study English because it is important for my education and future	0.74	.000**
I am interested in practicing English inside and outside of classes		
I want to learn English; it is something useful and a priority in my life	0.72	.000**
I study English because it is important for my education and future		
I love English classes, and my teacher inspires me to learn	0.70	.000**
I would like to speak and write English perfectly and naturally		
I would feel confident if I had to speak on the phone in English	0.69	.000**
My parents encourage me to learn English		
I love English classes, and my teacher inspires me to learn	0.69	.000**
I want to learn English; it is something useful and a priority in my life		
I love English classes, and my teacher inspires me to learn	0.68	.000**
I am interested in practicing English inside and outside of classes		
I am interested in practicing English inside and outside of classes	0.67	.000**
I would like to speak and write English perfectly and naturally		
I study English because it is important for my education and future	0.67	.000**
I love English classes, and my teacher inspires me to learn		
I am interested in practicing English inside and outside of classes	0.66	.000**
I want to learn English; it is something useful and a priority in my life		
My parents encourage me to learn English	0.66	.000**
I am interested in practicing English inside and outside of classes		
I pay attention in class	0.65	.000**
I am interested in listening to songs in English rather than in Spanish		
They teach me English at home	0.64	.000**
My parents know English, and I interact with them		
I am motivated during classes	0.63	.000**
I usually pay attention to the explanation in class		
Learning English is important because I can communicate with people from other countries	0.62	.000**
I am interested in practicing English inside and outside of classes		
I would feel confident if I had to speak on the phone in English	0.62	.000**

Correlated Variables	r	Sig
I pay attention in class		
I would like to speak and write English perfectly and naturally	0.61	.000**
I study English because it is important for my education and future		
I find it easy to understand everything I hear and see in English	0.61	.000**
I would feel confident if I had to speak on the phone in English		

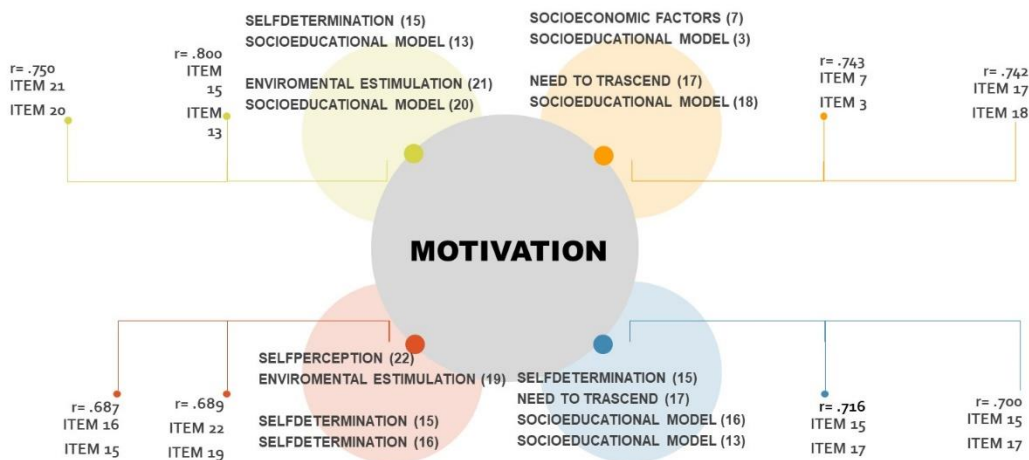
As can be seen, there are quite a few important correlations, and they have been ordered from highest (.800) to lowest (.613). Some demonstrate consistency in the students' responses, such as the items "They teach me English at home" and "My parents know English and I interact with them", which have a correlation value (r) of .642.

The item "I want to learn English, it is something useful and a priority in my life." It presents a high correlation with other items, such as "I would like to speak and write English perfectly and naturally" (.800), "I am interested in listening to songs in English more than in Spanish", (.716) "I study English because it is important for my education and future", "I love English classes and my teacher inspires me to learn" (.675).

Another variable that presents a high correlation with other variables is "I am interested in practicing English inside and after classes", which has a high linear correlation of .742 with "I study English because it is important for my education and future", .675 with "I love English classes and my teacher inspires me to learn", .658 with "I want to learn English, it is something useful and a priority in my life", and .656 with "My parents encourage me to learn English". The presence of these correlations suggests that students with a positive attitude and intense motivation are more likely to achieve transcendental learning in ESL. Furthermore, interest in practicing the language seems to be a factor in the teaching and learning process.

Figure 1 allows us to graphically appreciate the correlations described and observe how motivation plays a central role, establishing relationships with psychological theories and socioeconomic aspects. Furthermore, the most significant correlations found in the instrument adapted from the AMTB can be identified. For example, item 15 is based on self-determination theory. For a better interpretation of this figure, you can consult Table 1, which specifies the number that corresponds to each item. Similarly, item 13 is contextualized within the framework of Gardner's socio-educational model, which explains the motivational intensity of students towards learning in ESL, as well as their taste and affinity towards the linguistic community and the language. These relationships and theoretical foundations highlight the importance of motivating learners in the process of acquiring an L2.

Figure 1. Interrelation between concepts applied in the AMTB items and their correlation r

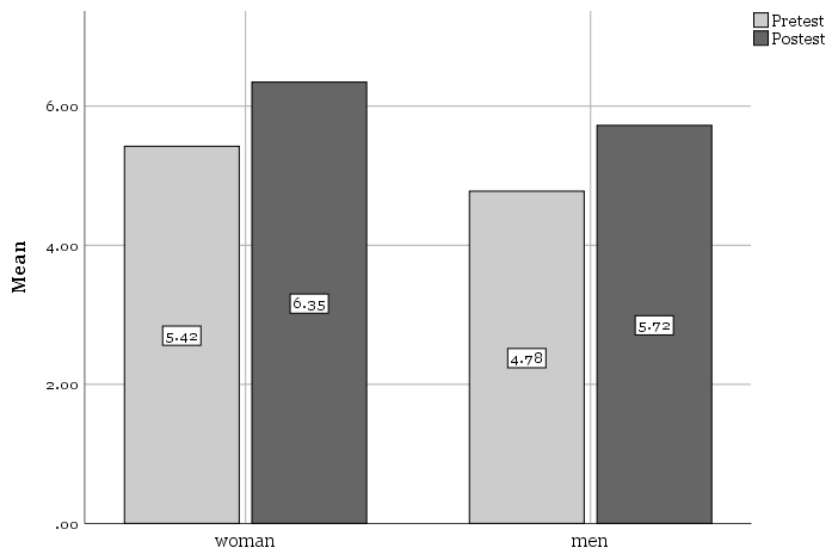


Analysis of the instrument for the pretest-posttest

Descriptively, both in the pretest and in the posttest, we worked with a total of 31 children, all belonging to the same group. Of them, 13 were women, representing 41.9%, while 18 were men, representing 58.1%. Regarding the scores obtained, an average of 5.04 was recorded in the pretest, with a standard deviation of 1.44, and an average of 5.98 in the posttest, with a standard deviation of 1.50.

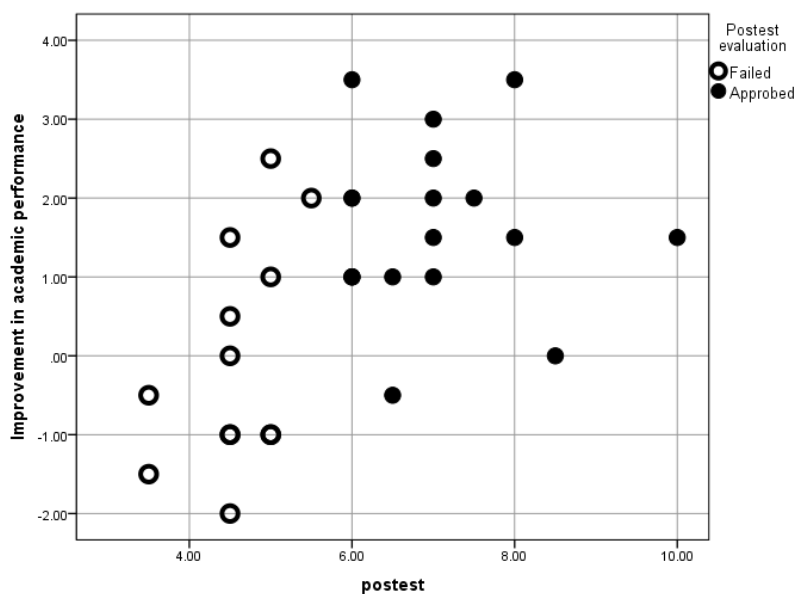
A comparison of the means obtained in both tests was carried out according to gender, as shown in Figure 2. In the case of women, an increase in their scores was observed, going from 5.42, considered a failing grade, to 6.34, which is considered a passing result. On the other hand, in the case of men, the average scores ranged from 4.77 to 5.72. Both averages, considered insufficient.

Figure 2. Comparison of mean scores by sex during both tests



The data was also analyzed in the categories of passed and failed, as shown in Figure 3, following as a reference the criteria established by the Mexican educational authorities. Based on what is established in the regulations and policies, it is considered passing from six and failing, less than the aforementioned qualification, according to the Educational Trends Information System in Latin America of the document (SITEAL, 2018). In this figure it can be seen that only two of the participants who passed did not increase their grade, while there are two students who improved by 3.5 points. Regarding the failure percentages, during the pretest there were 23 failures, which represents 74.2% of the students. However, in the posttest the number of failed students decreased to 13, which is equivalent to 41.9%.

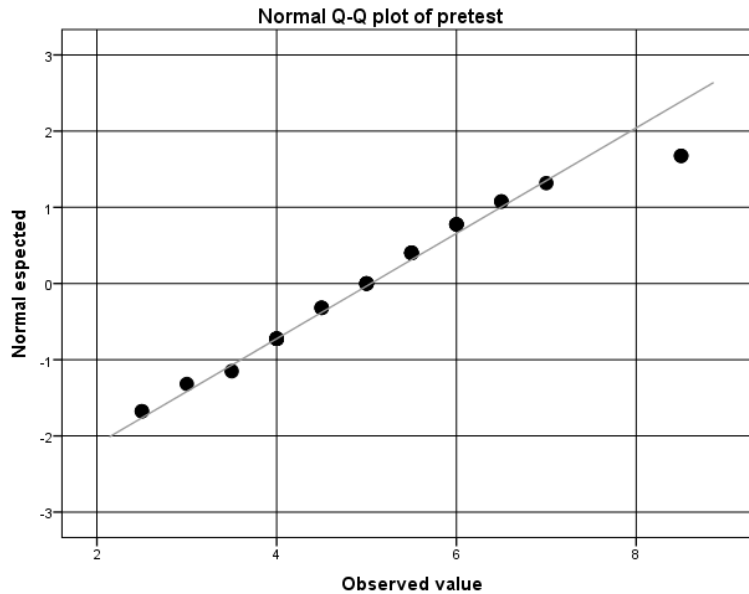
Figure 3. Point diagram between the posttest and the score difference



Normality test

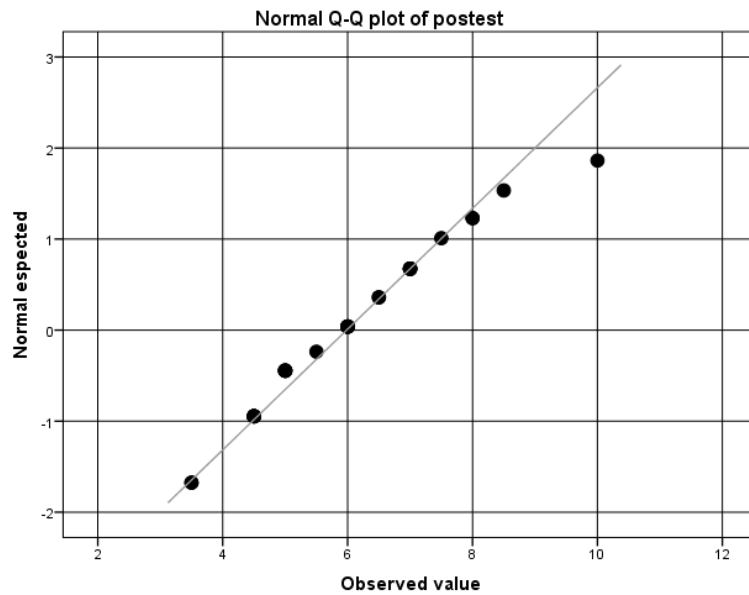
In the case of the pretest, the Shapiro-Wilk test of normality for parametric samples yielded a statistical value of 0.954 with a significance of 0.198, so it can be considered with a confidence level of 95% that the scores obtained observe a normal distribution of probabilities. The distribution of the pretest scores can be seen in Figure 4, where a good fit can be seen.

Figure 4. Pretest goodness adjustment



The same normality analysis was carried out, obtaining in the Shapiro-Wilk test to evaluate a statistical value of 0.957, with a significance level of 0.237, indicating with a confidence level of 95%, that the posttest scores follow a normal distribution. Similarly, Figure 5 is shown where the goodness of fit of the data can be seen.

Figure 5. Posttest goodness adjustment



Hypothesis testing for two related samples

Descriptively, an increase in the scores of both tests was already noted, so a test was carried out to test the null hypothesis that the scores obtained in both tests are the same, previously verifying that both distributions present a normal distribution. Rejecting this hypothesis would imply that the averages are different and, therefore, it could be concluded that the experimental treatment applied, which consists of an intervention with a neuropsycholinguistic approach, with 80% practice and 20% theory, was effective.

The hypothesis test was carried out with a confidence level of 95%, initially obtaining descriptive statistics that indicate a score of 5.04 in the pretest and 5.98 in the posttest. Among the 31 pairs of data analyzed, a Pearson correlation coefficient of $r = 0.505$ is observed, with a significance level of 0.004 (Table 3), which indicates a medium level association between the scores.

Although a higher correlation coefficient would be expected in this type of exercise, the result obtained is explained by the fact that, although in general the average has increased, there are several cases of students who individually have not improved their grade and even obtained a lower score on the posttest.

Table 3. Correlations of paired samples

Correlations of paired samples		N	Correlation	Significance (Two-Tailed)
Pair 1	pretest & posttest	31	0.505	0.004

The results of the hypothesis test (Table 4) show that the difference between both tests is 0.93, with a standard deviation of 1.47, and yields a probabilistic value associated with the test statistic of 0.001 (bilateral Sig.), is the critical value to determine whether to reject the null hypothesis of equality of means. In this case, the obtained value of 0.001 is less than 0.05. Therefore, the null hypothesis of equality of means is rejected, thus concluding, with a confidence level of 95%, that the means between the pretest and the posttest are different. This result of the hypothesis test allows us to affirm that the experimental treatment described is effective in increasing the students' grades, at least in the group where said treatment was applied.

Table 4. Hypothesis testing for related samples

Paired differences	Mean	Standard deviation	Standard error mean	Lower	Upper	Significance (Two-Tailed)
pretest - posttest	-0.93	1.47	0.26	-1.47	-0.39	0.001
95% confidence interval of the differences						

Limitations of the research

In the intervention stage, various situations were presented that are intended to complement the analysis, some of which limit the objectivity of the results:

Environmental and socioeconomic context

Some socioeconomic indicators were detected that may influence poor performance in ESL learning. Both in the data collection in the post-test and in the duration of the intervention, some children did not attend school regularly. Some of them stated that they had been sick. Fear and anxiety about being evaluated were also detected. Specifically, one student drew a face with an expression of fear and insecurity on the exam.

Some children did not have the minimum materials to work with, such as pencil, scissors or paints. Few students completed the tasks they were assigned to do at home, forgetting to bring to school the teaching materials provided in class. This may indicate a lack of parental attention and supervision, added to the fact that some students did not bring a nutritious snack or buy food.

Atypical cases were observed of children who excelled in all activities, including memory retention. These children showed a clear motivation when perceiving the usefulness of English as a foreign language. In contrast, those students who expressed little interest in the activities and difficulties understanding the explanations in the classroom did not experience the same enthusiasm.

Holistic Neuroeducation and Multiple Skills in ESL

The majority of children presented cognitive difficulties in assigned tasks such as drawing, especially to express and communicate ideas, emotions and feelings, evidencing deficiencies in fine motor skills, visual-motor coordination and visual perception to capture the shapes, strokes and details of the object or image. In addition, it was possible to observe a low planning and organization capacity that the students had to structure and capture the figure. In addition, memory and concentration difficulties were observed, making it impossible to successfully create playful material and use it to understand and practice ESL syntax.

In relation to the kinesthetic game of hopscotch, this activity is designed for children aged 11 and 12, who are at a stage where they seek exciting experiences and challenges that promote their physical, cognitive, and social development (Desmet and Fokkinga, 2020). It was perceived that there was little interaction and healthy competition between the participants. Most of the students experienced the game on their own after explaining to them what the dynamics and grammatical sequence consisted of.

Respect the dynamics of the activities, an activity that consisted of creating a paper figure was considered complex. A feeling of pride and confidence was observed in the children who managed to complete it successfully, advancing with enthusiasm to the next phase, which consisted of using the origami as a toy to construct questions and short sentences.

Conclusions

Based on the statistical results of the AMTB questionnaire, it can be concluded that there are factors that influence poor academic performance in the English language in the students participating in the research. Socioeconomic, educational and neuropsycholinguistic aspects have a significant influence on performance in this language. In quantitative terms, it was observed that the average score in the pretest was failing, with a value of 5.04.

Family and educational aspects influence performance in learning ESL. It was observed that the least favorable responses in the AMTB instrument were found in the items "At my house they help me with my homework" and "My parents know English and I have interactions with them", which obtained a lower average score of 5.30 and 4.70 respectively. These results demonstrate that some students have limited access to academic support at home or to English-speaking models, which may contribute to poor academic performance in this subject. Lack of attention and support at home can negatively influence student performance.

The items that obtained the highest scores were "I am in good health" and "I arrive at school on time", with means of 8.52 and 8.71 respectively, this suggests that students have the resources and support necessary to maintain good health. health and fulfill their academic responsibilities. Regarding motivation, the highest responses were observed in the items "Learning English is important because I can communicate with people from other countries" and "I study English because it is important for my education and future", with an average score of 9.06. These results indicate that students are aware of the importance of language in their education and in their future.

Evidence shows that parental attention improves children's emotional and social skills. In the items, "My parents encourage me to learn English" and "My parents know English and I interact with them" it is reflected that the presence of adults who speak the language is an important factor in the acquisition of an L2, since this favors positively on children's ability and confidence to learn and not become inhibited when communicating in ESL. Parents and the school community are essential in students' learning of ESL. The interaction and encouragement that children receive both at home and in the school environment have a significant impact on their ability and confidence to communicate in the language.

A holistic methodology with a focus of 20% on grammar and 80% on practice can improve certain English learning skills. The evidence at a descriptive level indicates that the mean of the scores obtained in the post-test (5.98) is higher than that of the pre-test (5.04), which suggests that the treatment was effective in improving the linguistic deficit in ESL, in late learners. To establish whether these differences are statistically significant, a hypothesis test was carried out to test the null hypothesis that the scores obtained in both tests are the same, obtaining a probabilistic value associated with the test statistic of 0.001 (bilateral Sig.). As this value is less than 0.05, the null hypothesis of equality of means is rejected, thus concluding, with a confidence level of 95%, that the means between the pretest and the posttest are different. The above indicates that the aforementioned treatment was favorable for improving performance in ESL, although as indicated before, not all students improved their grade.

It is important to recognize that, although the results of this research are encouraging, an analysis is necessary in various circumstances, testing the hypothesis described in other socioeconomic contexts and other educational levels, experimenting with a larger budget, longer interventions and with the presence of control groups.

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