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How to apply a neuroeducational program to teach English in the stage 3-6 at an ordinary classroom?

**Final Dissertation Project of a Double Degree in
Early Childhood Education and Primary
Education (minoring in English)**

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Abstract

This final degree project supports the creation of a neuroeducational program unit called HERVAT, which aims to facilitate the learning of a second language (L2) from 3 to 6 years old children in an EFL classroom. The program consists of six-point interventions, and it is designed to be accessible to a wide range of learners. The program is grounded on the latest research in neuroscience and linguistics, and it is based on the Neurolinguistic Approach (NLA), which is a new paradigm for the teaching and learning of communication. The program was designed to be engaging and interactive, and it incorporated technology to enhance the learning experience. The study will employ a pretest-posttest control group design to investigate the effect of the HERVAT program. The program intends to offer educators an alternative to help young children learn a second language and it may contribute to the development of more effective and inclusive educational practices.

Key words: Neuroeducation, Neuroscience, English as a foreign language (EFL), HERVAT program, Young learners.

Aquest treball de fi de grau dóna suport a la creació d'una unitat de programació neuroeducativa anomenada HERVAT, que pretén facilitar l'aprenentatge d'una segona llengua (L2) amb nens i nenes de 3 a 6 anys en una aula d'EFL. El programa es basa en intervencions de sis punts i està dissenyat per ser accessible a una àmplia gamma d'alumnes. El programa es basa en les darreres investigacions en neurociència i lingüística, i es basa en l'Enfocament Neurolingüístic (NLA), que és un nou paradigma per a l'ensenyament i l'aprenentatge de la comunicació. El programa va ser dissenyat per ser atractiu i interactiu, i va incorporar tecnologia per millorar l'experiència d'aprenentatge. L'estudi emprarà un disseny de grup de control pretest-posttest per investigar l'efecte del programa HERVAT. El programa pretén oferir als educadors una alternativa per ajudar els nens petits a aprendre una segona llengua i pot contribuir al desenvolupament de pràctiques educatives més efectives i inclusives.

Paraules clau: Neuroeducació, Neurociència, Anglès com a llengua estrangera, Programa HERVAT, Joves aprenents.

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1. Justification

Neuroeducation is an emerging discipline that seeks to improve teaching processes and student learning by integrating knowledge from neuroscience, pedagogy, and psychology. It aims to promote various aspects of learning, such as emotional management, attention, motivation, creativity, movement, cognitive processes, and memory. This approach is considered to be the future of education, as it focuses on understanding how the brain works and learns, which can facilitate the training of teachers and enhance the learning experiences of students. My goal is to create a similar program addressed to learning an L2, focuses on activating the brain areas necessary or responsible for this learning.

It will be based on a method called HERVAT whose purpose is, according to Ortiz (2017), to stimulate basic sensorimotor processes, to build new neural connections, therefore, to build memories for the creation of stable circuits in the brain. The HERVAT program is intended to work through three sensorimotor exercises (H.E.R.) (Hydration, balance, breathing) and three other multisensory stimulation (V.A.T.) (Visual, auditory, tactile stimulation) and reach the cognitive brain, that processes the information and stimulates neuronal connections of learning. Thus, several outcomes are expected, such as improving language acquisition and developing better language processing skills, and expanding vocabulary. A neuroeducation program can help enhance cognitive flexibility, which may have broader benefits for learning and problem-solving skills. Also, learning a new language requires strong memory skills, as learners need to remember new vocabulary, among others.

To sum up, with this research project, I am expecting to contribute to the acquisition of a second language in the stage 3-6 years old through a neuroeducational HERVAT unit program.

2. Theoretical framework:

2.1 Teaching English to very young learners

English as a Foreign Language (EFL) education for young learners has become a global phenomenon with growing research interest. Understanding the factors that influence EFL instruction for young learners is essential for teachers and policymakers to develop effective educational approaches. The characteristics of young learners, including age, cognitive development, language skills, and motivation, have a large impact on EFL teaching. For example, young children may have different levels of cognitive and language development, which may affect their ability to acquire English as a foreign language (Khan, 2018). A student's native language skills can affect cognitive and language transferability and therefore EFL learning (Pinter, 2016). In addition, students' motivation both, intrinsic and extrinsic motivation, and self-regulation, can promote engagement and success in EFL learning (Dornyei, 2009).

The instructional methods used in teaching EFL to young learners play an important role in language development. Different approaches such as direct methods, communicative methods, and task-based language teaching are widely used in teaching EFL to young learners. The choice of teaching method can depend on many factors, such as the learner's age, skill level, and learning context (Nikolov and Dzhigunovich, 2006). Thus, a direct approach that emphasizes exposure and communication in the target language may be more appropriate for younger students with limited prior language skills, while task-based language teaching, which focuses on meaningful communication through work, is more appropriate for older students with higher abilities.

Contextual factors, including cultural, social and institutional factors, also need to be considered in early EFL learning. Indeed cultural elements, such as the student's cultural level and the cultural fit of learning materials, can influence students' motivation, engagement, and learning outcomes (Kubanyova, 2014). Social factors, including the roles of parents, peers, and teachers, also determine the students' language development through social interaction, support, and scaffolding (Kim, 2015). Finally, institutional

factors such as curriculum, resources, and policies may affect the quality of EFL instruction for young learners as well. (Lasagabaster & Sierra, 2010).

All in all, EFL instruction for early learners is influenced by many variables, including learner characteristics, instructional methods, and situational factors. Being aware of these factors can inform educators and policymakers in developing effective EFL teaching methods for young learners. Further research is needed to explore the complex interplay of these factors and their impact on EFL instruction for young learners.

2.2 Theoretical foundations about neuroeducation

According to León (2007), education is viewed as a way of thinking, a conception of life, and all the knowledge and skills required for a person to comprehend the outside world. Indeed, the goal of education is to improve learning, and the goal of neuroscience is to comprehend the mental processes associated with this learning. Thus, there is some overlap, and scientific tools may be used to change educational practices.

According to the APA Dictionary of Psychology (2015):

"Neuroscience is the scientific study of the nervous system, including its structure, function, development, genetics, and biochemistry." (p.720).

This definition highlights the interdisciplinary nature of the field, encompassing biology, psychology, computer science, and more, in order to study the nervous system at various levels of analysis. As teachers look to better understand how the brain processes and stores information to enhance teaching, the field of neuroscience, which studies the intersection of neuroscience and cognition, has attracted a lot of attention recently.

Neuroeducation is an interdisciplinary field that combines education, neuroscience, psychology, and cognitive science. Its goal is to better understand the learning process and how this knowledge can be applied to improve teaching strategies and education in general (Carew and Magsamen, 2010; Mansilla, 2020, p. 53). As stated in their article

"The Promise and Perils of Integrating Education and Neuroscience," Halpern and Hakel (2006) define neuroeducation as the application of insights from neuroscience to the design and delivery of education. This is particularly true of neuroeducation, which is the process of planning and delivering instruction using knowledge and insights gained from the study of neuroscience. (Halpern, Dot F. , and Hakel, M. D. , 2006). These authors emphasize the significance of incorporating a scientific comprehension of the brain and how it learns into the development of educational practices and policies. They contend that a more scientific approach might lead to more effective educational strategies.

The involvement of neuroscientists in teaching, as pointed out by Ortiz (2009), leads to advancements in our understanding of the brain and scientifically sound stimulation programs for the functional improvement of the human brain, known as neuro pedagogy.

“Neuropedagogy faces the challenge of teaching a deeper understanding of brain functioning and investigating ways to generate more neurons and brain connections during the school years for the comprehensive development of children's brains” (Ortiz, 2009, p.263).

Indeed, the human being possesses various cognitive, emotional, physical, and social abilities that stem from the brain, a crucial organ for the human body (Sarmiento, 2018). Through brain gymnastics, it is possible to connect the three dimensions of learning, physical, emotional, and energetic. The author also highlights the importance of training teachers to understand that the brain is triune and composed of the Neocortex (rational-thinking), the limbic brain (emotional-feel), and the reptilian brain (do-act) and suggests exploring training possibilities for in-service teachers.

Regarding attention, Mora (2013) explains that attention is not a single phenomenon but refers to different brain processes based on the stimuli received and the level of interest. On the other hand, Bilbao (2015) defines the value of attention by illustrating the relevance of the "striatum" region in the emotional brain for the development of our tastes and desires and how it is closely related to attention, as it identifies the intensity of the stimulus and the speed of satisfaction.

2.3 Teacher's beliefs

As the challenge is to create engaging learning experiences that motivate students and guarantee that lessons are retained, the role of the teacher is still crucial in a neuroeducation-based pedagogy in the twenty-first century (Villarreal, 2018). Following the teachings of Paulo Freire, who said that:

"Education does not change the world, it changes the people who are going to change the world" (Villarreal, 2018, p. 1).

To offer new methodologies and educational strategies supported by scientific evidence for the improvement of the educational system, innovation and research are essential in education.

A teacher's prior knowledge and experience greatly influence attitudes toward neuroscience. According to Pajares (1992), a teacher's prior knowledge, including formal education, professional development, and personal experience, determines beliefs and attitudes toward educational practice. For example, teachers with formal training in brain-based research and neuroscience concepts are more likely to adopt neuroeducation as a valid approach to teaching and learning (Tokuhama-Espinosa, 2011). Similarly, teachers who have had positive experiences incorporating neuroeducational strategies in the classroom may have better beliefs about the effectiveness of these strategies (Jensen, 2008).

As stated above, cognitive constructs guide teachers' perceptions and behaviors and play an important role in shaping teaching practices in neuroeducational contexts. Attitudes toward brain research or feelings about brain-based inquiry and its use in the classroom will result in an increased willingness to adopt this new approach. Teachers with positive attitudes toward brain-based research are more likely to accept neuroeducation as a valid approach to inform educational practices (Brewer, 1997). On the other hand, teachers who are skeptical or misunderstood about the validity and relevance of brain-based research may have a less positive attitude toward neuroscience (Goswami, 2006). Attitudes toward brain-based research may be influenced by factors such as teachers' exposure to accurate and reliable sources of information, personal values and beliefs, and level of critical

thinking about neuroscience evidence (Dekker et al., 2012). Contextual factors such as school culture and professional development opportunities also shape teachers' attitudes toward neuroscience. School culture, which includes the shared values, norms, and beliefs of the school community, can influence teachers' perceptions and adoption of neuroeducational practices (Willis & Wolfe, 2017). For example, schools that prioritize evidence-based practices and resources and support teachers to learn neuroscience may increase teachers' positive attitudes toward integrating neuroscience principles into educational practice.

In addition, professional development opportunities focused on neuroscience are paramount to raising awareness in the field, since they have a clear impact on teachers' beliefs by providing opportunities to learn and apply neuroscience concepts in the classroom (Klingberg et al., 2010). Professional development that is ongoing, collaborative, and tailored to educators' needs and interests can positively impact educators' beliefs about the value of neuroeducation in improving student learning outcomes.

In summary, teachers' beliefs about neuroscience are shaped by several factors, including teachers' prior knowledge and experience, attitudes toward brain research, and contextual factors such as school culture and professional development opportunities. Understanding these factors can help educational policymakers and practitioners develop effective strategies to help teachers adopt neuroeducational practices. By acknowledging and explaining teachers' beliefs, educators can harness the potential of neuroscience to improve classroom teaching and learning, ultimately leading to better student outcomes.

2. 3 A neuroeducational program: HERVAT

According to Bruer (1997), “the goal of any neuroeducational program is to leverage the latest scientific understanding of the brain and how it learns to enhance the educational experience for students” (p.4). Also, Bruer (1997) argues that the translation of neuroscience to the field of education is "a bridge too far" (p.4) and that careful communication of research is necessary to avoid pitfalls in the field of neuroeducation.

HERVAT, presented by Ortiz (2018), (an acronym for hydration, balance, breathing, and visual, auditory, and tactile control) is not a program to learn but to prepare the student's brains so that they have better concentration and learning. The execution of the project is generally carried out for five minutes before each class and on a daily basis. According to Ortiz (2018), the neuroeducational program emphasizes the impact of physical exercise on cognitive function and highlights its neurological basis. The author also stresses the importance of hydration as a purely physiological factor and proper breathing as a crucial organic process for calming students. Additionally, the program includes balance and sensory exercises that enhance attention and are performed voluntarily.

Ortiz (2018), underpins the relevance of regularly practicing these exercises, as habits are formed through consistent repetition. According to Ortiz (2018), the goal of the program is to foster collaboration between the fields of neuroscience and education by opening new avenues for research. The HERVAT study results indicate that the program has been successful in improving students' concentration levels, motivation, and learning processes when acquiring a second language. According to the HERVAT program developed by Cernuda (2020-2021), the goal is to optimize the functioning of various brain circuits and to cultivate "neuro healthy" habits. Cernuda (2020-2021) recognizes the close relationship between emotions, learning, and memory, and highlights that the program has been shown to improve social dynamics by reducing stress levels among students. The program's aim is to enhance students' emotional well-being, which in turn positively affects their brain function and overall learning experience. Thus, this project aims to uncover and understand the student's strengths and weaknesses, with the ultimate goal of enhancing the former and addressing the latter. Furthermore, it is a foray into educational innovation research, always keeping in mind the primary focus: the developing brain of the very young learner.

According to García (2014), focusing on early childhood education, the teacher should try to strike a balance between established routines and unexpected elements that are essential for kids to stay receptive and learn. These daily routines act as a roadmap for the students and give them a sense of security by indicating what will happen next. Children experience a variety of physical, emotional, cognitive, and social experiences during the early childhood stage, which includes children from birth to six years old. Teachers can aid their students in connecting their hemispheres for optimal brain

processing by using brain gymnastics techniques. Despite advancements, there is still much work to be done before the results of neuroscience can be effectively applied to education in the school setting (García 2014).

As for the pedagogical implementation, the HERVAT branch offers participation in brain exercises in a large group, individually or in pairs, which will positively influence the acquisition of curriculum content during the school day. One of the main goals of the program is to create a steady state of attention, as this is a key component of cognitive function when learning a second language. For this purpose, the same exercises will be systematically repeated weekly for a month, which will allow synchronization of neural inputs. Teachers will use their methodological strategies to create a positive and comfortable emotional environment in the classroom, using their own symbolic materials placed in conspicuous places for all to learn. Students can easily track the HERVAT section. This includes incorporating pictograms into the curriculum in a way that allows for diversity based on student needs.

3. Objectives

3.1 General objectives

- Stimulate attention span and memory in preschool students by proposing a program based on neuroeducation.

3.2 Specific objectives

- Involve a second language in the teaching process through information, innovation, and programming of neuroeducational exercises and activities.
- Develop total physical response methodologies in the classroom that favor learning.
- Increase the level of attention in infant students through repetitive, stimulating and systematic exercises.
- Foster a positive emotional environment between teacher, and student through a daily class routine.

4. Methodology

4.1 Research instruments

To evaluate the effectiveness of the neuroeducation program, the study utilized several research instruments including observations, a final delay test, and an interview. The observations were conducted during the pilot phase to collect qualitative data on student engagement, participation, and any noticeable changes in behavior or learning outcomes. Additionally, observations were taken to measure cognitive processes such as attention, memory, and motivation before, while and after the program was introduced.

Furthermore, the final delay test was administered at the end of the program to assess the long-term retention of the information taught during the neuroeducation program. This test was designed to measure how well the students were able to recall and apply the concepts they had learned several weeks after completing the program. Finally, an interview was conducted with the students to gain insight into their perceptions of the program and its effectiveness in improving their cognitive abilities and learning outcomes. The combination of these research instruments provided a comprehensive evaluation of the neuroeducation program's effectiveness and provided valuable insights into the cognitive processes involved in learning. The findings of this study have the potential to inform the development of more effective educational programs that take into account the latest research in cognitive neuroscience.

4.2 The HERVAT project

The program proposed had a neuroscientific basis that endorsed, through the exercises and actions carried out in the scheduled sessions, the positive influence it exerted on the child's brain and prepared them for truly meaningful subsequent learning of an L2. It was carried out during the established English school hours in the three-year-old classroom, from 09:00 a.m. to 9:45 p.m. Its development consisted of carrying out exercises and actions for a total of five to ten minutes per day, twice per week.

The study of the program included several stages of implementation and evaluation. The first phase included any formal teaching unit lasting a month. At this early stage, the

neuroeducation program was not introduced into the classroom, but observations were conducted to collect qualitative data on student engagement and participation, as well as any noticeable changes in behavior or learning outcomes. After the first phase, the second phase involved the implementation of the program and observations that assessed the impact of the neuroeducation program on student learning outcomes. Furthermore, observations were taken to measure cognitive processes such as attention, memory, and motivation.

Over the course of a month, the students were assessed using a variety of routines to implement the HERVAT unit and lesson activities. After the pilot phase, the third phase was followed by a delayed trial that took place one month after the official testing period. This lag test was designed to assess the potential long-term impact of a neuroeducational program on student achievement. Students were reassessed using the same observational and assessment themes to measure long-term improvement in cognitive ability and academic performance.

These different stages of implementation and evaluation allowed for a comprehensive assessment of the effectiveness of the neuroeducational program. The first phase provided insight into the program's feasibility and acceptability in the classroom, while the pilot phase provided quantitative data to measure the program's expected impact. Finally, an ending test was done, comparing the vocabulary students knew before the study, seen in the observations, and what they had learned after the HERVAT unit. As a reflective tool, an interview with the teacher was conducted. All in all, these steps provided a reliable assessment of the effectiveness of neuroeducational programs in improving student achievement.

5. Study

5.1 Context of the school

Escola Vedruna Escorial, Vic

Students from 3 to 6 years old at this school, attend English classes once a week as part of their schedule. The school also emphasizes the use of corners and workshops as part of its teaching approach.

The school's emphasis on the environment and workshops demonstrate an active and experiential learning approach. The environment can refer to creating a holistic learning environment where students can engage in hands-on activities and interact to master skills. Workshops may include hands-on, interactive and collaborative learning opportunities to encourage students to be actively involved in their own learning. Bearing this in mind, the neuroeducational program was implemented to improve English learning outcomes for students with different vocabulary levels in the program.

The diverse student population may include students from different cultures, with varying levels of English, and with individual learning needs. This diversity can create unique challenges and opportunities for developing effective learning strategies, including the neuroeducational program, to meet the diverse needs of students.

Early observations helped assess the prior vocabulary of students, including those who had studied English in extracurricular activities and provided insight. The final results then showed the extent to which the neuroeducational program contributed to the acquisition of the target vocabulary, including any measurable improvement in the learning outcomes of the students.

5.2 Program implementation

Students followed these steps guided in a PowerPoint if they felt that they wanted to. They were not forced but invited to. The steps had been created adapted to their daily routine.

HYDRATION

According to Armstrong et al. (2012), dehydration of at least 2% of body fluids could affect attention-demanding tasks, immediate recall of skills, and speed, which hits the efficacy of psychomotor responses. Therefore, it is important for students to bring a bottle of water and drink a sip of water at the start of each HERVAT unit to maintain proper hydration levels.



Figure 1: indicates drinking water

E FOR BALANCE

According to Shumway-Cook and Woollacott (2017), human balance is the result of different sensory-perceptual-motor integrations, which lead to brain development, good learning, and attention. The state of alertness of the attentional tone is dependent on the integrity of the mesencephalic reticular system and the integration of the cerebellum and its connections. Perceptual motor development connects a child's perceptual or sensory skills to their motor skills so they can perform a variety of tasks. The manipulation of the body by finely regulating its orientation and balance is necessary to perform desired functions, and the weighting of sensory input following stroke also demonstrates significant inter-individual variability between students.



Figure 2: indicates exercises of balance

R FOR BREATHING

According to several studies, including Stromberg et al. (2015) and Zeidan et al. (2010), a slow and deep breath helps to calm down and to diminish the states of stress/anxiety. The regularity of the respiratory rhythm is a very important factor that helps to fix attention and a better oxygenated brain. Breathing exercises, such as nasal breathing, are useful for improving and strengthening memory and also promote general learning ability.



Figure 3: indicates slow breathing

VISION

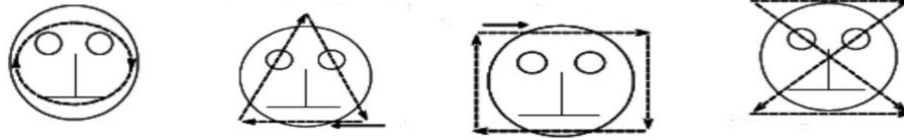


Figure 4: indicates ocular movements

According to Carrasco (2011), following the ball of a PowerPoint or video with your eyes without moving your head improves attentional processes and perceptual-visual and spatial capacity. Eye movement in the design of presentation slides can incorporate eye gaze and eye-tracking study findings to include rhythm and improve the audience's eye path control. Picture-based visual communication improves learning and recall, according to Levie and Lentz (1982). The result of following the ball of a PowerPoint or video with your eyes without moving your head is an increase in the slope of the contrast-response function and a reduction in the trial-to-trial variability of the response time-courses.



Figure 5: indicates the vision point

AUDITION

According to several studies, including Ross and Balasubramaniam (2014) and Kujala et al. (2001), auditory stimulation can improve language learning. Repeated stimulation produces changes in the distribution of brain frequencies that could last up to 30 minutes and also increases the capacity for immediate verbal memory. Learning a spoken language presupposes efficient auditory functions, and participants who listened to frequent standard stimuli showed improved auditory perception at the root of language learning.



Figure 6: indicates the routines and the start of some songs

TOUCH

According to several studies, including Alivernini and Lucidi (2011) and Gómez et al. (2018), using the index finger to touch ourselves can improve spatial attention, awaken our body, and help students pay more attention to all kinds of environmental stimuli. Tracing with the index finger can aid in learning information and improve perceptual attention. Hand and finger gesturing can affect the visual focus of attention, and attention guides the motor-timing strategies in finger tapping.



Figure 7: indicates a song

5.3 Observation grids

Observation grids were implemented as a tool for evaluating the effectiveness of a neuroeducational program that aimed to enhance the learning outcomes of students. The decision to conduct observation grids was motivated by the need for a systematic

approach to collect and analyze data on specific behaviors, actions, or interactions targeted by the program. The observation grids were used to track the progress of students and provide feedback to educators for improvement.

This legend indicates a scale from 1 to 5, where 1 means strong disagreement, 2 is a slight agreement, 3 is uncertainty or lack of clarity, 4 is agreement, and 5 stands for a strong agreement.

First Unit without the HERVAT program

The didactic unit aimed to teach 3-year-old children about the different parts of the face using the story "Big Green Monster" (Emberley, 1992) and a song. The objectives included introducing children to the parts of the face, engaging them in a fun and interactive way, and promoting language development. The unit spanned four weeks, with each class lasting 45 minutes and consisting of various activities.

The lesson began with a warm-up activity to get the children excited and ready for the lesson, followed by a review of previous vocabulary or the introduction of new vocabulary words related to the parts of the face. The lesson then involved reading aloud the story "The Big Green Monster" (Emberley, 1992) and using expressive reading techniques to emphasize the parts of the face mentioned in the story. A song and movement activity were also included to teach the children a song that focused on the parts of the face, followed by a vocabulary practice using flashcards. The lesson concluded with opportunities for children to use the vocabulary words in simple sentences or through role-play activities.

WEEK 1:

| ITEM | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Positive general interest and collaboration | | x | | | |
| Students paid attention | | x | | | |

| | | | | | |
|---|--|---|--|---|--|
| Objectives of the session were acquired | | | | x | |
| The pace of the session was appropriate | | | | x | |
| Students were able to repeat vocabulary | | x | | | |

Comments:

The lack of cohesion among the group was evident, with students becoming easily distracted and spreading out in different directions, resulting in a dispersed and disjointed group during the task.

WEEK 2:

| ITEM | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Positive general interest and collaboration | x | | | | |
| Students paid attention | x | | | | |
| Objectives of the session were acquired | | | x | | |
| The pace of the session was appropriate | | x | | | |
| Students were able to repeat vocabulary | x | | | | |

Comments:

They seemed to be not engaged and participative, with few students losing attention and becoming distracted during the storytelling. That made the rest of the group unfocused.

WEEK 3:

| ITEM | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Positive general interest and collaboration | | | x | | |
| Students paid attention | | x | | | |
| Objectives of the session were acquired | | | x | | |
| The pace of the session was appropriate | | | | x | |
| Students were able to repeat vocabulary | x | | | | |

Comments:

I think that since we repeated a unit it was not engaging the students to follow with motivation the whole class. Otherwise some students felt comfortable knowing what the class was about.

"No sé què és." - A student showed confusion and lack of retention of the vocabulary words, indicating a potential challenge in grasping the new concepts.

WEEK 4:

| ITEM | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Positive general interest and collaboration | | | x | | |
| Students paid attention | | x | | | |
| Objectives of the session were acquired | | | | x | |

| | | | | | | |
|---|---|--|--|--|--|---|
| The pace of the session was appropriate | | | | | | x |
| Students were able to repeat vocabulary | x | | | | | |

Comments:

Some of the children seemed to lose interest during the storytelling of "The Big Green Monster"(Emberley, 1992). They appeared distracted and restless, with a few students becoming fidgety and disengaged. It may be helpful to incorporate more interactive elements, such as props or gestures, to keep their attention and motivation high throughout the lesson.

"M'aburreixo molt vull anar a la classe normal" - A student expressed lack of interest and motivation towards the big green monster story, showing signs of being disengaged during the lesson.

Second Unit with HERVAT program

As part of the HERVAT program of neuroeducation, the warm-up activity included starting the class with a focus on hydration. Moreover, a PowerPoint was presented to activate Equilibrium, Respiration, Visual, Auditory and Touch stimulation.

This lesson plan involved various activities to teach young children about animals. The warm-up activity included reviewing animals and their sounds, followed by the introduction of a book featuring different animals. During the lecture of "Brown Bear, Brown Bear, What Do You See?" (Martin Jr. & Carle, 1967) the children engaged in the story and imitated animal sounds and actions using props. The lesson also included a

review of animal vocabulary words and their characteristics, with activities such as matching.

Objectives:

To introduce young children to animals and their characteristics in a fun and interactive way through songs and books.

To develop listening, speaking, and vocabulary skills in a playful and engaging manner.

To promote imitation and movement skills by imitating animals' actions and sounds.

Duration: 45 minutes for each class for 4 weeks, once a week. Varying the activities.

WEEK 1:

| ITEM | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Positive general interest and collaboration | | | | x | |
| Students paid attention | | | | x | |
| Objectives of the session were acquired | | | | | x |
| The pace of the session was appropriate | | | | | x |
| Students were able to repeat vocabulary | | | | x | |

Comments:

It was impressive to see the group actively exploring and investigating different aspects of the task, with students

dispersing to gather information and share their findings, fostering a collaborative and dynamic group.

The students displayed a positive sense of autonomy and self-direction, dispersing to different areas and engaging in meaningful ways, showcasing a high level of initiative during the activity.

WEEK 2:

| ITEM | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Positive general interest and collaboration | | | | x | |
| Students paid attention | | | | x | |
| Objectives of the session were acquired | | | x | | |
| The pace of the session was appropriate | | | | | x |
| Students were able to repeat vocabulary | | | | x | |

Comments:

There was a positive sense of curiosity and adventure among the group, with students dispersing to investigate different aspects of the task, showing eagerness and enthusiasm.

The students demonstrated a sense of initiative and resourcefulness, to gather information and actively participate in the activity, showcasing a proactive and engaged attitude.

WEEK 3:

| ITEM | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Positive general interest and collaboration | | | x | | |
| Students paid attention | | | x | | |
| Objectives of the session were acquired | | | x | | |
| The pace of the session was appropriate | | | | | x |
| Students were able to repeat vocabulary | | | | | x |

Comments:

It was evident that the students had been practicing the vocabulary as they effortlessly recalled and repeated the words during the activity, showcasing a solid understanding of the concepts.

“Bird!” Repeated all of them, such as different vocabulary, “dog, cat, etc.”

WEEK 4:

| ITEM | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Positive general interest and collaboration | | | | x | |
| Students paid attention | | | | x | |
| Objectives of the session were acquired | | | | x | |

| | | | | | |
|---|--|--|--|---|--|
| The pace of the session was appropriate | | | | X | |
| Students were able to repeat vocabulary | | | | X | |

Comments:

The students showed a strong grasp of the vocabulary as they confidently repeated the words related to the story, demonstrating excellent retention and recall skills.

“Podem tornar a cantar la cançó?” - A student asked the teacher to repeat the song learned in the unit, displaying motivation to engage in the activity again and practice the vocabulary.

“¿Que és això?” - A student asked a question about a vocabulary word during the story, indicating curiosity and engagement in the learning process.

“Una altra vegada!” - Several students requested to repeat the story, showing eagerness to hear it again and reinforce their understanding of the vocabulary.

Third Unit without the HERVAT program

This didactic unit aimed to teach young students about the story of the “Three Little Pigs” (Halliwell, 1849) and related vocabulary through various activities. These included reading and discussing the original story, engaging in vocabulary activities, reading a different version of the story, watching a video adaptation, and providing hands-on exploration of materials. These activities aimed to enhance story comprehension and

vocabulary learning while also encouraging active listening, critical thinking, and sensory exploration.

Objectives:

To introduce the story of the “Three Little Pigs” (Halliwell, 1849) and teach vocabulary related to materials, such as bricks, straw, and sticks.

To promote listening skills, story comprehension, and vocabulary development through engaging activities.

WEEK 1:

| ITEM | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Positive general interest and collaboration | | x | | | |
| Students paid attention | x | | | | |
| Objectives of the session were acquired | | | | x | |
| The pace of the session was appropriate | | | x | | |
| Students were able to repeat vocabulary | x | | | | |

Comments:

The students seemed to lack concentration and were easily distracted, resulting in a dispersed group that struggled to work collaboratively.

“No ho recordo” A student struggled to recall the vocabulary words from the story, indicating potential difficulty in retaining the new information.

WEEK 2:

| ITEM | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Positive general interest and collaboration | | | | x | |
| Students paid attention | | | x | | |
| Objectives of the session were acquired | | | x | | |
| The pace of the session was appropriate | | | | x | |
| Students were able to repeat vocabulary | | x | | | |

Comments:

During the hands-on exploration of materials in "The Three Little Pigs" (Halliwell, 1849) lesson, some of the children appeared to be rough with the materials, handling them inappropriately or not following instructions on how to explore them safely. It is important to reinforce proper handling and respect for materials to ensure a safe and respectful learning environment.

"Podem anar a jugar?" - A student showed disinterest and lack of motivation towards the materials-related activities, indicating a preference for other activities.

WEEK 3:

| ITEM | 1 | 2 | 3 | 4 | 5 |
|------|---|---|---|---|---|
|------|---|---|---|---|---|

| | | | | | |
|---|---|---|--|--|--|
| Positive general interest and collaboration | x | | | | |
| Students paid attention | | x | | | |
| Objectives of the session were acquired | x | | | | |
| The pace of the session was appropriate | | x | | | |
| Students were able to repeat vocabulary | x | | | | |

Comments:

I feel that the session was quite repetitive. There was a lack of cohesiveness among the group, with students dispersing and not maintaining a sense of togetherness during the task.

WEEK 4:

| ITEM | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Positive general interest and collaboration | | x | | | |
| Students paid attention | | x | | | |
| Objectives of the session were acquired | | | x | | |
| The pace of the session was appropriate | | x | | | |
| Students were able to repeat vocabulary | | x | | | |

Comments:

The story retelling activity could benefit from more scaffolding and guidance. Some of the children struggled to retell the story using the vocabulary words and materials explored. Providing visual aids, prompts, or sentence frames could help support their language development and enable them to confidently retell the story in their own words.

"No vull aquesta historia una altre vegada." - A student expressed disinterest towards repeating the story, indicating a lack of motivation for reinforcement of the vocabulary."

Some of them were actually really involved in the task from the very beginning.

5.2 Discussion

In the educational process, motivation is crucial. As part of my neuroeducational thesis project, I have observed how motivation can be increased when a program module is practiced as a habit. The results of my observations aim to shed light on the positive impact of regular practice on motivation in educational settings.

One of the key observations I made on my project was that regular practice helps students feel close and comfortable. When a module of the program is regularly practiced as a routine, students become more aware of the content, structure, and expectations of the program. Students feel more confident and motivated to participate in the program as they get used to the routine. In addition, practicing routines contributes to the formation of habits and self-discipline in students. When a unit of programming becomes a habit, students are more likely to do it with ease and consistency without relying solely on motivation. This automaticity has in fact helped students overcome barriers and

challenges that can limit their motivation as routines become an integral part of their routines.

Moreover, the teacher believed that incorporating the program into their daily classroom routine was easy and could be done in less than five minutes. She also recommended the program to other teachers. The teacher planned to continue using the program in future years and was open to adapting it to meet the changing needs of their students. However, she also felt that they needed more knowledge about the program to fully implement all its features. Overall, the program seemed to have a positive impact on the classroom environment and learning outcomes.

In summary, my observations in my neuroeducational thesis project have shown that regular practice of HERVAT can significantly increase motivation in an educational setting. Regular practice promotes intimacy, belonging, achievement and habit formation among students, which positively affects their motivation levels. Incorporating regular practice of neuroeducational programs into education can be a valuable strategy to increase motivation and ultimately improve student learning outcomes.

However, when the neuroeducational program was implemented, the final results from the formal assessments conducted after the testing period showed significant improvement in the students' vocabulary. Quantitative data generated from these assessments show a marked increase in student's vocabulary scores relative to their baseline. This improvement was especially noticeable in students who had not been exposed to the target vocabulary before, including students who did not use English as an extracurricular activity.

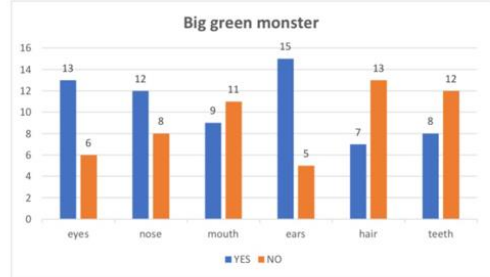
The graphs of the delayed test results show that the group exposed to the HERVAT program had significantly higher scores in the unit where the program was implemented compared to the control group. In the following graphs, we can observe the results of the group that was exposed to the HERVAT program, showing the performance of the students in three different units. It is noteworthy that there is a significant increase in correct answers in the unit where the HERVAT program was implemented, indicating the positive impact of the program on the student's learning outcomes.

HERVAT exposed group

Big green monster

| Student: | eyes | nose | mouth | ears | hair | teeth |
|----------|------------------|------------------|------------------|------------------|------------------|------------------|
| 1 | yes | yes | no | yes | no | no |
| 2 | yes | yes | yes | yes | yes | yes |
| 3 | yes | no | no | yes | no | no |
| 4 | yes | yes | yes | yes | yes | no |
| 5 | yes | yes | yes | yes | no | yes |
| 6 | yes | no | yes | yes | no | yes |
| 7 | yes | yes | no | yes | no | no |
| 8 | no | no | no | yes | yes | yes |
| 9 | yes | no | no | yes | no | no |
| 10 | yes | yes | yes | yes | yes | yes |
| 11 | yes | no | no | yes | no | no |
| 12 | yes | yes | no | yes | no | yes |
| 13 | no | yes | no | no | no | no |
| 14 | no | yes | yes | no | no | no |
| 15 | no | yes | no | yes | no | no |
| 16 | no | no | yes | no | no | yes |
| 17 | yes | yes | yes | no | yes | no |
| 18 | yes | yes | no | no | no | no |
| 19 | no | no | no | yes | yes | yes |
| 20 | yes | no | yes | yes | yes | no |
| | 13(YES) 6(NO) | 12(YES) 8(NO) | 9(YES) 11(NO) | 15(YES) 5(NO) | 7(YES) 13(NO) | 8(YES) 12(NO) |

| Students | Vocabulary | YES | NO |
|----------|------------|-----|----|
| eyes | | 13 | 6 |
| nose | | 12 | 8 |
| mouth | | 9 | 11 |
| ears | | 15 | 5 |
| hair | | 7 | 13 |
| teeth | | 8 | 12 |
| TOTAL | | 64 | 55 |

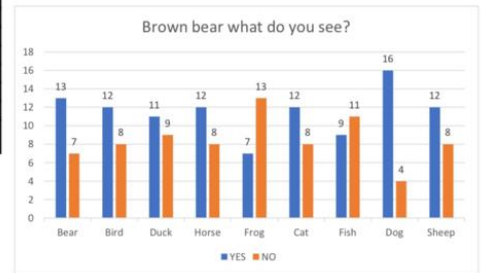


Brown bear what do you see?

| Student: | Bear | Bird | Duck | Horse | Frog | Cat | Fish | Dog | Sheep |
|----------|------|------|------|-------|------|-----|------|-----|-------|
| 1 | no | yes | no | yes | no | yes | no | yes | yes |
| 2 | no | yes | yes | yes | no | yes | yes | yes | yes |
| 3 | yes | yes | yes | yes | yes | yes | yes | no | no |
| 4 | yes | yes | yes | yes | no | yes | no | yes | yes |
| 5 | yes | yes | yes | yes | no | yes | no | yes | no |
| 6 | yes | yes | no | no | yes | no | no | yes | yes |
| 7 | no | no | no | yes | no | yes | yes | yes | yes |
| 8 | no | yes | yes | yes | no | no | yes | yes | yes |
| 9 | yes | no | yes | no | no | no | no | yes | yes |
| 10 | yes | no | no | no | yes | no | yes | yes | no |
| 11 | yes | yes | no | no | no | yes | no | yes | yes |
| 12 | no | no | yes | no | yes | yes | yes | yes | no |
| 13 | yes | no | no | yes | no | no | no | yes | no |

| Students | Vocabulary | YES | NO |
|----------|------------|-----|----|
| Bear | | 13 | 7 |
| Bird | | 12 | 8 |
| Duck | | 11 | 9 |
| Horse | | 12 | 8 |
| Frog | | 7 | 13 |
| Cat | | 12 | 8 |
| Fish | | 9 | 11 |
| Dog | | 16 | 4 |
| Sheep | | 12 | 8 |
| TOTAL | | 104 | 76 |

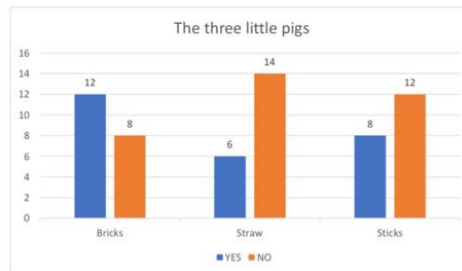
| | | | | | | | | | |
|----|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 14 | yes | yes | no | yes | no | no | no | no | yes |
| 15 | yes | yes | yes | yes | no | yes | no | yes | yes |
| 16 | yes | yes | no | no | yes | no | yes | yes | no |
| 17 | no | no | yes | yes | no | yes | no | no | yes |
| 18 | no | yes | no | yes | no | yes | yes | yes | no |
| 19 | yes | no | yes | no | yes | yes | yes | yes | no |
| 20 | yes | no | yes | no | yes | no | no | yes | yes |
| | 13(YES) 7(NO) | 12(YES) 8(NO) | 11(YES) 9(NO) | 12(YES) 8(NO) | 7(YES) 13(NO) | 12(YES) 8(NO) | 9(YES) 11(NO) | 16(YES) 4(NO) | 12(YES) 8(NO) |



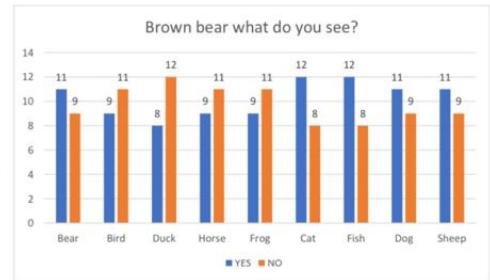
Three little pigs

| Student: | Bricks | Straw | Sticks |
|----------|------------------|------------------|------------------|
| 1 | no | no | no |
| 2 | no | no | yes |
| 3 | yes | yes | no |
| 4 | yes | no | no |
| 5 | yes | no | yes |
| 6 | yes | yes | no |
| 7 | no | yes | no |
| 8 | no | yes | yes |
| 9 | no | no | no |
| 10 | yes | no | no |
| 11 | yes | yes | yes |
| 12 | yes | no | no |
| 13 | yes | no | no |
| 14 | yes | no | yes |
| 15 | yes | no | yes |
| 16 | yes | no | no |
| 17 | no | no | no |
| 18 | no | yes | yes |
| 19 | no | no | yes |
| 20 | yes | no | no |
| | 12(YES) 8(NO) | 6(YES) 14(NO) | 8(YES) 12(NO) |

| Students | Vocabulary | YES | NO |
|----------|------------|-----|----|
| Bricks | | 12 | 8 |
| Straw | | 6 | 14 |
| Sticks | | 8 | 12 |
| TOTAL | | 26 | 34 |



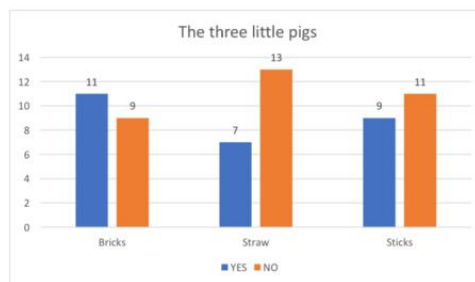
| | | | | | | | | | |
|----|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 14 | yes | no | yes | no | yes | yes | no | no | no |
| 15 | yes | yes | yes | no | no | no | yes | yes | yes |
| 16 | yes | yes | no | yes | no | yes | no | yes | yes |
| 17 | no | yes | yes | no | yes | no | yes | no | no |
| 18 | yes | yes | no | no | yes | yes | yes | yes | yes |
| 19 | yes | no | no | no | yes | yes | no | no | yes |
| 20 | no | yes | yes | yes | no | no | yes | no | yes |
| | 11(YES) 9(NO) | 9(YES) 11(NO) | 8(YES) 12(NO) | 9(YES) 11(NO) | 9(YES) 11(NO) | 12(YES) 8(NO) | 12(YES) 8(NO) | 11(YES) 9(NO) | 11(YES) 9(NO) |



The three little pigs

| Student: | Bricks | Straw | Sticks |
|----------|------------------|------------------|------------------|
| 1 | yes | yes | yes |
| 2 | yes | yes | yes |
| 3 | no | yes | no |
| 4 | yes | no | yes |
| 5 | yes | no | yes |
| 6 | no | yes | no |
| 7 | no | no | yes |
| 8 | yes | no | no |
| 9 | no | yes | yes |
| 10 | no | no | no |
| 11 | yes | no | no |
| 12 | no | no | no |
| 13 | yes | no | yes |
| 14 | yes | yes | no |
| 15 | no | no | no |
| 16 | yes | no | yes |
| 17 | yes | no | no |
| 18 | no | no | no |
| 19 | yes | no | no |
| 20 | no | yes | yes |
| | 11(YES) 9(NO) | 7(YES) 13(NO) | 9(YES) 11(NO) |

| Students | Vocabulary | YES | NO |
|----------|------------|-----|----|
| | Bricks | 11 | 9 |
| | Straw | 7 | 13 |
| | Sticks | 9 | 11 |
| | | 27 | 33 |

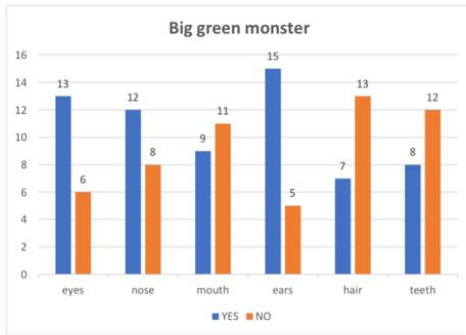


| | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 5 | yes | yes | no | no | no | no | no | yes | no |
| 6 | no | no | no | yes | yes | yes | no | yes | yes |
| 7 | no | no | yes | no | no | no | no | no | no |
| 8 | yes | no | no | no | yes | no | yes | yes | no |
| 9 | no | yes | no | yes | no | yes | yes | no | yes |
| 10 | yes | no | yes | yes | no | no | yes | yes | no |
| 11 | no | no | no | no | yes | yes | yes | yes | no |
| 12 | yes | yes | no | yes | no | yes | no | no | no |
| 13 | no | yes | yes | yes | no | yes | yes | yes | yes |

| | | |
|-------|----|----|
| Frog | 9 | 11 |
| Cat | 12 | 8 |
| Fish | 12 | 8 |
| Dog | 11 | 9 |
| Sheep | 11 | 9 |
| | 92 | 88 |

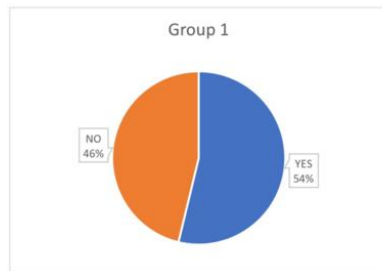
While on these graphs we can observe the results of the group that was not exposed to the HERVAT program. Unlike the group exposed to the program, there is no significant increase in correct answers.

Group 1

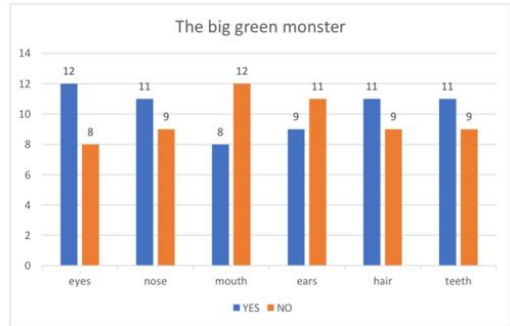


Total:

| YES | NO |
|-----|----|
| 64 | 55 |

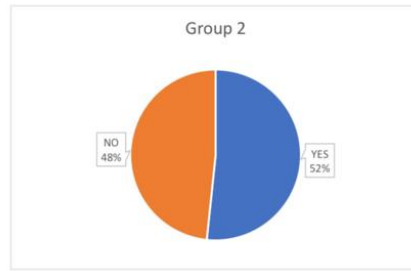


Group 2



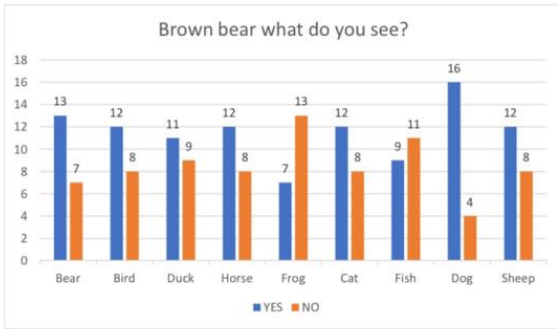
Total:

| YES | NO |
|-----|----|
| 62 | 58 |



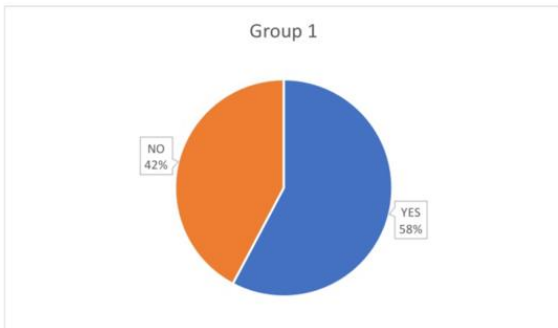
In these graphs we can see the results of both groups before the HERVAT program was implemented. The results show that both groups had a similar performance, with no significant difference in correct answers on the units being tested. This indicates that prior to the implementation of the program, there was no inherent difference in the learning outcomes between the two groups.

Group 1

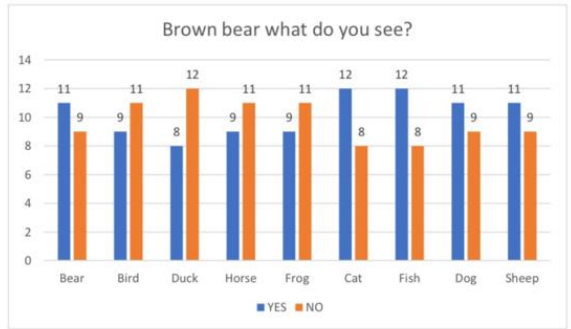


Total:

| YES | NO |
|-----|----|
| 104 | 76 |

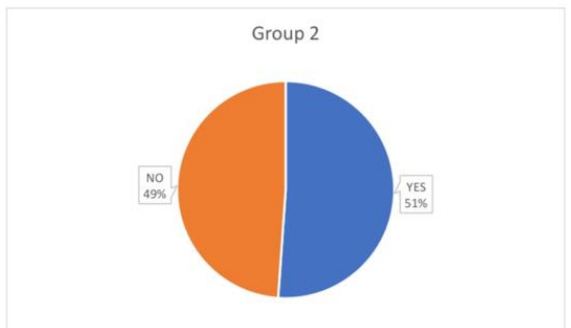


Group 2



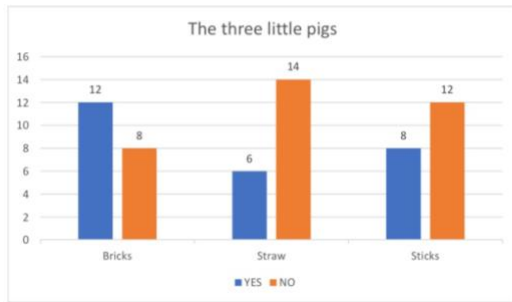
Total:

| YES | NO |
|-----|----|
| 92 | 88 |



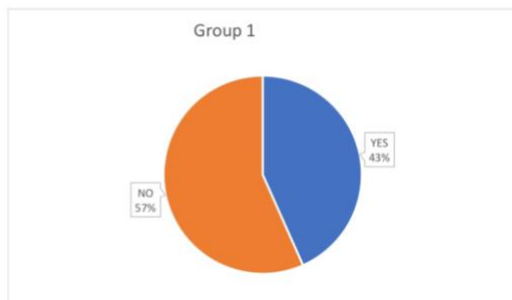
In these graphs, we can observe the results of both groups after the implementation of the HERVAT program in one unit. The results show a slightly significant difference in correct answers between the group exposed to the program and the group that was not exposed.

Group 1

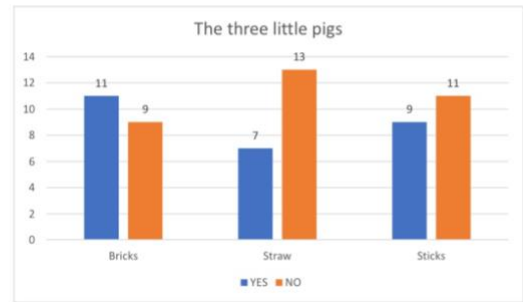


Total:

| YES | NO |
|-----|----|
| 26 | 34 |

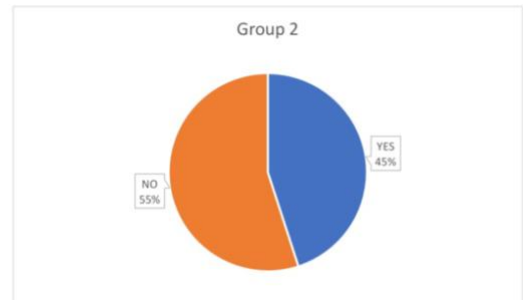


Group 2



Total:

| YES | NO |
|-----|----|
| 27 | 33 |



In the last graph, we can observe the results of both groups on the delayed test after the implementation of the HERVAT program in the group exposed. Surprisingly, the results show that there is no significant difference in correct answers between the exposed and non-exposed group.

These results strongly suggest that neuroeducational programming effectively facilitates the acquisition of new vocabulary, even in students who have not been exposed to it before. The observations provided qualitative evidence that students did not initially acquire vocabulary without the program, while the final results of the formal assessments showed a significant improvement in acquisition. vocabulary through the implementation of the neuroeducational program. This increases the program's effectiveness in promoting vocabulary learning and maintains the program's potential to improve language acquisition.

From the interview, it seems that the neuroeducational program has had a positive impact on the students' learning by helping them meet their basic needs and activating brain parts before starting a session. The program also allows for easy incorporation of movement and music, which can be beneficial in learning a second language. The teacher believes

that incorporating the program into their daily classroom routine was easy and can be done in less than five minutes. She said *“Molt fàcil, ja et dic a mi em sabia greu per que disposavem nomès d’un ordinador i poder no és tant pràctic, però bé ha sigut molt facil i ocupa poca estona, o varia la durada de la sessió, son menys de 5 minuts i això es pot fer”*.

She also recommended the program to other teachers, particularly the aspect of reminding students to use the bathroom before a session. *“Afegiria anar al lavabo per tenir en compte necessitats bàsiques, no se si el programa és molt tancat i no es pot fer però com beuen aigua, també anar al lavabo”*. It is not exactly what the program looks for but it is a basic aspect that as an entity they reflected through the program and made them think about changing some aspects.

The teacher plans to continue using the program in future years and is open to adapting it to meet the changing needs of their students. However, they also note that they need more knowledge about the program to fully implement all its features. *“Penso que estaria guai saber-ne més per implementar les mateixes coses sempre, penso que estaria bé com a escola i com a mestres dir: va fem aquestes 4 coses abans de començar les sessions, que tothom ho fes, penso que estaria bé, però personalment no tinc prou coneixement”*. Overall, the program seems to have a positive impact on the classroom environment and learning outcomes.

6. Conclusion

The combination of neuroscience and education provides a promising approach to understanding the neural mechanisms underlying learning and how to apply this knowledge in the classroom. As Halpern and Hakel (2006) state, incorporating a scientific understanding of the brain and how it learns into the development of educational practices and policies is essential. My study confirms that by implementing practical strategies from neuroeducation, teachers can create a learning environment that maximizes students' cognitive potential and promotes effective learning, as suggested by Dekker et al. (2012).

Quantitative data were collected to evaluate the effectiveness of the program in improving these cognitive processes compared with a control group that did not receive the program to compare the amount of vocabulary these children learned during the study period.

Observations made during the implementation of the neuroeducational program provided valuable information about the students' prior vocabulary knowledge. Through careful observation of student's classroom interactions, engagement, and interactions, it is clear that some students have limited or no prior knowledge of the particular vocabulary they have learned. after that.

Throughout my research, I observed the positive effects of neuroeducational programming on a variety of topics, including attention, memory, and motivation, as demonstrated by assessments and graphs showing significant improvements compared to the control group. These findings are consistent with the theoretical framework provided by Jensen (2005), who emphasizes the importance of understanding how the brain learns and how educators can use this knowledge to design effective teaching strategies.

The pedagogical guidelines established in the neuroeducational program have provided teachers with practical strategies to optimize the learning process. These guidelines emphasize the importance of integrating multisensory experiences, providing opportunities for reflection and feedback, and promoting active learning. By incorporating these principles into their teaching practice, teachers can create an environment that maximizes students' cognitive potential and promotes optimal learning. For example, incorporating activities that promote active learning, integrating multisensory experiences, and providing opportunities for reflection and feedback are some of the effective strategies highlighted in the program. As a result of my findings, I believe that other teachers can benefit greatly from incorporating neuroeducation into their classrooms beyond just teaching a second language. By applying these pedagogical guidelines, teachers can create a learning environment that enhances student learning and promotes effective learning. According to García (2014), focusing on early childhood education, the teacher should endeavor to find a balance between established routines and unexpected elements that are vital for children to remain receptive and learn. These daily routines serve as a guide for the students and provide them with a sense of security, as they signal what is to come next. By incorporating neuroeducational principles into their teaching practice, teachers can create an environment that maximizes students' cognitive potential and promotes optimal learning.

As for the limitations of the project, it is worth considering possible modifications of the neuroeducational program due to the duration of the study. While my thesis project provides valuable information about the immediate impact of the program, further research is needed to address the long-term impact of implementing the program over a long period of time. Longitudinal studies may shed light on whether the observed improvements in cognitive and learning outcomes are maintained throughout the school year.

Moreover, I created a decalogue with eight tips for teachers.

8 TIPS FOR TEACHERS

1

UNDERSTAND THE NEUROEDUCATIONAL PRINCIPLES:

Familiarize yourself with the principles of neuroeducation, which involves understanding how the brain processes and acquires language.

CREATE A ROUTINE WITH THE PROGRAM:

If you create a routine implementing the neuroeducational program it would make it easier for students and for the teacher.

2

3

USE MULTISENSORY INSTRUCTION:

Incorporate multisensory instructional strategies that engage different senses, such as sight, hearing, and touch, to enhance language learning even more apart from the program.

PARTICIPATE:

Never force any student to participate in the program but invite them. Sometimes they would not want to do it but next day they would try it.

4

5

INTEGRATE TECHNOLOGY:

Utilize appropriate technology tools and resources to support second language learning.

FOSTER A POSITIVE LEARNING MINDSET:

Promote a growth mindset among your students, emphasizing that language learning is a process that requires effort, practice, and perseverance.

6

7

ADAPT THE PROGRAM:

Provide opportunities and adapt the program to the students needs and not the students to the program. Recognize and accommodate the diverse learning needs and preferences of your students.

COLLABORATE WITH OTHER TEACHERS AND PARENTS:

Create a supportive language learning ecosystem. Foster communication and collaboration with colleagues to share best practices and resources, and involve parents in supporting their children's language learning at home.

8

7. References

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8. Appendices

8.1 Schedule

| TIME | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY |
|---------|-------------|------------------------------|------------------|--------------|--------------------------------|
| 9:00h | environment | english (small group) | reading training | good morning | english (small group) |
| 10:00 h | breakfast | breakfast | breakfast | breakfast | breakfast |
| 11:00 h | art | environment | nature | games | psychomotricity |
| 12:00 h | break | break | break | break | break |
| 13:00 h | break | break | break | break | break |
| - | - | - | - | - | - |
| 15:00 h | environment | environment | psychomotricity | environment | all i oli (whole school games) |

| | | | | | |
|------------|-------|------------|-------------|-------|--------------------------------|
| 16:00 h | music | playground | environment | games | all i oli (whole school games) |
|------------|-------|------------|-------------|-------|--------------------------------|

8.2 Observations:

First unit:

1. As soon as the teacher starts reading the story, some of the 3-year-old students start fidgeting and looking around the room. They seem disinterested and bored.
2. One student starts playing with their shoes, while another starts tapping their fingers on the table. These students appear to have lost interest in the story.
3. One student starts to mimic the voices of the characters in the story, leading to a chorus of giggles from the rest of the class.
4. Some students begin to offer their own interpretations of the story and its themes, indicating that they are thinking critically and engaging with the text on a deeper level.
5. One student interrupts the teacher and asks to go to the bathroom. They may be using this as an excuse to leave the room because they are bored with the story.
6. Some students start to yawn and rub their eyes, indicating that they are getting sleepy and disengaged from the story.
7. One student openly declares, "This story is boring!" which may influence other students to also express their negative opinions about the story.
8. Some students may start to talk amongst themselves and ignore the story completely.

Second unit:

1. While some of the students seem a little distracted at first, the teacher's animated storytelling style soon has many of them leaning forward and listening intently.
2. One student starts to giggle at a funny part of the story, which leads to a ripple of laughter from the rest of the class.

3. A few students start to ask the teacher questions about the characters or plot, indicating that they are fully engaged with the story and interested in learning more.
4. One student starts to make connections between the story and their own experiences, showing that they are actively processing and thinking critically about the story.
5. One student starts to stare off into space, indicating that they may have tuned out of the story and are no longer paying attention
6. Some students start to nod along and express empathy for the characters in the story, indicating that they are emotionally invested in the narrative.
7. One student eagerly volunteers to act out a part of the story, showing that they are enthusiastic about engaging with the text in a creative way.
8. Some students begin to offer their own ideas for what might happen next in the story, indicating that they are actively participating and invested in the narrative.
9. Some students start to squirm and wiggle in their seats, indicating that they are finding it hard to sit still and focus on the story.

Third unit:

1. A few students start fidgeting with their clothes or hair, suggesting that they are getting restless.
2. One student starts to quietly hum a tune to themselves, indicating that they are not fully engaged with the story being read.
3. Some students start to wiggle in their seats, suggesting that they are struggling to stay focused on the story.
4. A student begins to repeatedly ask the teacher when the story will end, indicating that they are not enjoying it and are eager to move on to something else.
5. As the story progresses, some students start to make predictions about what might happen next, indicating that they are actively engaged with the narrative.
6. A few students start to ask the teacher questions about the story, showing that they are curious and eager to learn more.

7. Some students begin to look around the room and at the objects on the walls, suggesting that they are more interested in their surroundings than the story being read.
8. Some students begin to whisper to each other, indicating that they are not paying attention to the story being read.

8.3 Pictures

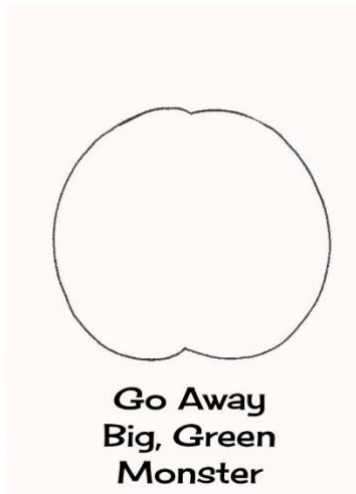


Figure 8: used as an activity for the book



Figure 9: TPR activity



Figure 10: TPR activity



Figure 11: Book

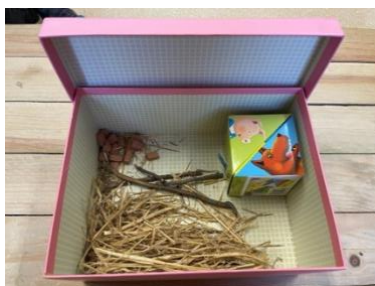


Figure 12: Mystery box



Figure 13: book and elements

8.4 Interview

1. Have you noticed any improvements in your students' learning since implementing the program?

“Jo crec poder que ha sigut una durada massa curta per poder veure diferències notables, però si que crec que ajuda per satisfer certes necessitats abans de començar un sessió i mes si canviem d'espai, vull dir que jo crec que poder ha sigut curt per valorar-ho bé. Crec que a la llarga pot ajudar a concentrarse o estar més atents”.

“Al ser Anglès sempre demano com estan, i és molt fàcil incorporar moviment en qualsevol moment, o dir va ara cantarem aquesta cançó. Aquest programa es guai justament per l'aprenentatge d'un altre llengua implica mil coses, per això es pot incorporar en qualsevol moment”.

2. Are there any aspects of the program that you would change, and why?

“No, afegiria anar al lavabo per tenir en compte necessitats bàsiques, no se si el programa és molt tancat i no es pot fer però com beuen aigua, també anar al lavabo”.

“A la classe dels cocodrils ens trobem que tots han d'anar al lavabo i ja vaig caure en l'error de dir que no, potser al implementar-ho podriem fer això, pipi i qui tingui set...i després començem a tope.”

“També no se si es podria fer sense el suport de la pantalla perquè com ara a la classe d'anglès no hi ha?”

-Amb què ho faries?

“Amb flashcards ni que sigui poder no? Pasa que es guai perquè és molt visual, però tenir ja flashcards a la classe d'anglès? I ells seguissin els passos, l'aigua el problema és que la tenen aquí (classe normal)”

3. How easy do you think it was to incorporate the HERVAT program into your daily classroom routine?

“Molt fàcil, ja et dic a mi em sabia greu per que disposavem nomès d’un ordinador i poder no és tant pràctic, però bé ha sigut molt facil i ocupa poca estona, o varia la durada de la sessió, son menys de 5 minuts i això es pot fer.”

4. Would you recommend a neuroeducational program to other teachers, and why?

“Sí, per exemple això del pip. L’aigua que es lo més fàcil i bàsic per nosaltres i en aquesta mestra de cocodrils li diria, ostres prova això abans de fer una activitat, de recordar els-hi, sobretot a I3 que hi ha molts moments estipulats de ara tothom va a fer pipí, però es clar cadascú té pipi al seu moment, jo crec que sí pot ser molt interessant implementar-ho”.

5. Do you plan to continue using the program in future years, and if so, how do you plan to adapt it to meet the changing needs of your students?

“Si si, aquestes dues coses sobretot, i lo altre perquè poder no he tingut temps de veure-ho bé i no conèixer a fons el programa igual em costarà més incorporar-ho tot i que pel que entenc a termes generals intento incorporar-ho a la sessió.”

“Penso que estaria guai saber-ne més per implementar les mateixes coses sempre, penso que estaria bé com a escola i com a mestres dir: va fem aquestes 4 coses abans de començar les sessions, que tothom ho fes, penso que estaria bé, però personalment no tinc prou coneixement”

Link to the interview and consent:

https://drive.google.com/file/d/16_GS692a4qdxpND5XWcLYhcWZTbSIPeo/view?usp=drivesdk

PART 2: Document de consentiment informat
Dades

 Títol del projecte... How to apply a neuroeducational program to teach English in the stage 3-6 at an ordinary classroom?

 Centre... University of vic

 Dades del participant (nom i cognoms i número de document d'identitat)
 .. Irene Erra Casacuberta 47958510Z

 Persona que proporciona la informació i full de consentiment (nom i cognoms)
Carla Ramírez Villanueva
Declaració

1. Declaro que he llegit el Full d'informació al participant sobre l'estudi esmentat.
2. Se m'ha fet el lliurament d'una còpia del Full d'informació al participant i una còpia d'aquest Consentiment informat, datat i signat. Se m'han explicat les característiques i l'objectiu d'aquest estudi, així com els possibles beneficis i riscos.
3. He tingut el temps i l'oportunitat de realitzar preguntes i aclarir dubtes. Totes les preguntes han estat respostes satisfactòriament.
4. Se m'ha assegurat que es mantindrà la confidencialitat de les meves dades personals, d'acord amb la Llei orgànica 3/2018, de 5 de desembre, de protecció de dades personals i garantia dels drets digitals i el Reglament general (UE) 2016/679, de 27 d'abril de 2016, de protecció de dades (RGPD).
5. El consentiment l'atorgo de manera voluntària i sé que em puc retirar en qualsevol moment d'una part o de la totalitat de l'estudi, sense expressió de causa o motiu, i sense que això comporti cap conseqüència.

Signatura per duplicat (una còpia per a la persona i una còpia per a l'estudiant)

Data:

3 de maig de 2023

Signatura del participant



Data:

12 de maig de 2023

Signatura de l'estudiant (investigador/a)



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