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APPLICATION OF BRAIN-BASED LEARNING THEORY USING GRAPHIC ORGANIZERS FOR VOCABULARY IMPROVEMENT FOR KINDERGARTEN STUDENTS AT RAYITOS DE LUZ ELEMENTARY SCHOOL, CUENCA

Trabajo de graduación previo a la obtención del título de Licenciadas en Ciencias de la Educación en Lengua y Literatura Inglesa.

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RESUMEN

Este estudio fue diseñado para analizar la efectividad de los organizadores gráficos basados en una teoría llamada Brain-Based Learning como una metodología para mejorar el aprendizaje de vocabulario en la materia de inglés en niños de pre-básica. Después de haber investigado algunas teorías relacionadas al desarrollo del lenguaje en niños, esta metodología fue aplicada a un grupo de 14 estudiantes pertenecientes al nivel de pre-básica. Este estudio fue aplicado en un periodo de 8 sesiones con una duración total de 2 meses.

Este método se enfoca en el mejoramiento del aprendizaje de vocabulario en el idioma inglés a través de organizadores gráficos junto con otras actividades apropiadas para niños tal como: canciones, historias, juegos, chants, rimas, manualidades y obras de teatro. Este estudio se basa en que los organizadores gráficos son herramientas efectivas que ayudan a los niños pequeños a organizar sus ideas con el objetivo de almacenar y recordar información. Los resultados durante las 8 sesiones de aplicación y los resultados de la evaluación final muestran los efectos positivos de esta metodología, por esa razón la consideramos una alternativa en la enseñanza de vocabulario en inglés para niños en el nivel de pre-básica.

PALABRAS CLAVES

Organizadores Gráficos, Teoría Brain-Based Learning, Mejoramiento de vocabulario, Niños de Pre-básica.



ABSTRACT

This study was designed to analyze the effectiveness of graphic organizers supported by Brain-Based Learning Theory as a methodology to improve English vocabulary acquisition among kindergarten students. After investigating some theories related to children's language development, this methodology was administered to a group of 14 children from a kindergarten level in 8 sessions over a period of two months.

This method focused on the improvement of vocabulary through graphic organizers along with other child-appropriate activities such as: songs, stories, games, chants, rhymes, mother goose, crafts and role plays. This study is based on the idea that graphic organizers are effective tools that help young children make connections in order to store and retrieve new information. The results during the eight sessions and in the post-test showed the positive effects of graphic organizers supported by Brain-Based Learning Theory; therefore, it is considered an alternative approach to teach English vocabulary in an EFL classroom especially to kindergarten students.

KEY WORDS

Graphic Organizers, Brain-Based Learning Theory, Vocabulary improvement, Kindergarten Students.



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DEDICATION

I dedicate my thesis to my parents who have given me their love, and support during my whole career.

Jessica

I dedicate this thesis to my family who is an essential part of my life.

Patricia



CHAPTER 1

1.1 PROBLEM STATEMENT

1.1.1 Research problem

One of the most important aspects when learning a language is the acquisition of vocabulary. Storing and retrieving new words for children is not simple. According to Pinter, memory strategies improve with age. In order to develop these strategies, young children need a lot of training and a significant amount of time for practicing (27). This process, which happens in the children's minds, needs to have appropriate techniques to make strong associations and connections. Rehearsal or repetition for memorization is not a good strategy for young children because kids between three or four years of age do not rehearse at all (Pinter 27). According to Baker-Ward, Ornstein, and Holden quoted in Pinter, "Children Learning Second Languages", rehearsal in young children has little effect on their memory performance; it does not matter if children are encouraged to do so (28). Therefore, it is important to research other methodologies in order to enhance the learning of vocabulary in children.

1.1.2 Research questions

- To what extent do graphic organizers supported by Brain-Based Learning Theory help children from 3 to 5 years old improve their vocabulary learning in English?
- To what extent do children remember the new vocabulary learned through graphic organizers?



1.2 JUSTIFICATION

Brain-Based Learning Theory has its underlying principles in neurolinguistics. The theory has the purpose to allow EFL teachers to understand how the brain works, and at the same time it provides some strategies to improve the EFL learning and teaching process. Using this theory, the educational techniques used for language learning can be brain friendly; moreover, they can contribute and create effective instruction. This research project looks for a new way to teach vocabulary using graphic organizers as tools to store and retrieve newly learned words taking into account the Brain-Based Learning Theory.

Children usually learn new words through listen and repeat activities, but those words are stored in the short-term memory. If we use graphic organizers to teach vocabulary, children are going to store the information in the long-term memory, because they are going to make connections and associations to remember the new words.

Primarily, this research project will benefit the students at the moment of learning new vocabulary since it will help children train their brain not just for learning a second language, but for organizing and processing information in other subjects. Second, it will also benefit English teachers in realizing the importance of Brain-Based Learning Theory providing that they understand how the brain works and help students to increase attention and retention. "Bringing this information to the classroom can help teachers engage diverse learners, offer effective feedback that leads to deeper understanding, and create a rich learning environment that attends to students' social and emotional needs along with their developing brains." (Boss 2)



Therefore, our project will adapt graphic organizers that can work with young children who cannot read and write yet in their native language helping not just them but the teachers, too by providing the latter with a tool for learning.

“Rayitos de Luz” Elementary School has been chosen for this project because its owners support EFL learning at an early age; however, children’s English language level is low. For that reason, we decided to apply the Brain-Based Learning Theory and the use of graphic organizers for vocabulary improvement in young children looking for strategies to enhance EFL learning.

1.3 OBJECTIVES

1.3.1 General objective

To enhance vocabulary learning through graphic organizers supported by Brain-Based Learning Theory in young children at “Rayitos de Luz” Elementary School

1.3.2 Specific objectives

- To determine to what extent graphic organizers supported by Brain-Based Learning Theory help children store and retrieve vocabulary;
- To apply graphic organizers supported by Brain-Based Learning Theory in young children at “Rayitos de Luz” Elementary School;
- To elaborate lesson plans for EFL learning of vocabulary.



CHAPTER 2

LITERATURE REVIEW

This chapter is divided into four sections. The first section is about Piaget's Cognitive Development. It is important for this study because we need to know how children acquire knowledge according to their ages. The second section of this chapter refers to Meaningful Learning which describes the way how children learn new vocabulary linking it to the knowledge they already have. To help in the achievement of this purpose, graphic organizers are used. The third section concerns Brain-Based Learning Theory. In this section, an overview of the ways how this theory affects the learning process in the brain is provided. The last section of this chapter is about Learning Strategies. They are essential since they provide an understanding of the way how students learn.

2.1 PIAGET'S COGNITIVE DEVELOPMENT

Piaget's theory of child development is based on the premise that children construct their own knowledge while they are exploring their environment. "The developing cognitive understanding is built on the interaction between the child and the things that can be observed and manipulated." Piaget affirms that "children's language is built on their cognitive development" (Lightbown and Spada 20). Intelligence is defined by Piaget as the basic life function that helps organisms to adapt to their environment, and during the process of adaptation, children attempt to reach a kind of balance between themselves and their environment (Pinter 8).



While children are interacting with their environment, mental structures and schemes are created all the time. There are four processes that influence the creation of the schemes. The first one is organization, which takes place when children use the schemes that they already have to create new, more complex ones. After that, the process of adaptation follows because children need to compare and adjust their new scheme to what they find in their environment. Consequently, children need to assimilate and accommodate the scheme. The last processes are assimilation and accommodation. Assimilation refers to interpreting the new knowledge taking into account the schemes that children already possessed. Accommodation happens when children have to modify their prior knowledge in order to fit their new knowledge (Pinter 8).

According to Piaget, the stages of development that every child follows are the same, and they are performed in the same order, which indicates that they are invariable.

There are five stages that all children follow:

- The first stage is called sensori-motor stage. This stage goes from 0 to 2 years old. Children generally repeat and imitate actions and sounds, they are curious, and they remember or look for things where they were last seen (Pinter 9).
- The second stage is called pre-operational stage. This stage goes from 2 to 7 years old. During this stage children give life to inanimate things, see things just from their point of view without taking into account other people's points of view, and focus on just one aspect of a task (Pinter 9).
- Around the age of 7 an intellectual revolution occurs. Children start a cognitive change. They start to complete tasks successfully (Pinter 11).



- The third stage is called concrete-operational stage. This stage goes from 7 to 11 years old. During this stage, children start to think logically, understand and use analogies efficiently, work in different tasks and complete them successfully, compare pictures and maps, and appreciate other people's point of view (Pinter 9).

“They become competent at organizing and sorting objects into hierarchical structures and they recognise that the same set of objects can be looked at and categorised in more than one way. Children's seriation also improves [...]. They can work out puzzles of simple analogy [...]. Another area of development is spatial awareness. Understanding of distance, maps, and directions improves.” (Pinter 12)

- The last stage is called formal-operational stage. This stage goes from 11 to 12 years old and beyond. In this stage,

“[...] children develop 'propositional thought' which enables them to become competent at discussing and evaluating problems without referring to the real world. Children at the formal operational development stage enjoy generating creative ideas and hypothetical propositions.” (Pinter 12)

This theory about how children acquire and develop language, among other abilities, helps teachers plan their classes according to what children can do at different ages, and it also helps teachers use or create the appropriate teaching materials to make children learn successfully.

As a result, Piaget divides the acquisition of knowledge according to children's ages. For the purpose of the learning of a second language, Ausubel



developed the Meaningful Learning Theory that focuses on the learner's construction of knowledge.

2.2 MEANINGFUL LEARNING THEORY

According to Ausubel's Meaningful Learning Theory, learners must relate the new information with the information they already know to construct knowledge that is meaningful to them. Meaningful Learning Theory involves the process that the person performs while linking two concepts. This theory is based on how information is integrated into the old knowledge structure.

"Ausubel believes that knowledge is hierarchically organized; that new information is meaningful to the extent that it can be related (attached, anchored) to what is already known." (qtd. in "Fpmipa" 1) That is the reason why new information can be transferred to long-term memory.

Ausubel points out that graphic organizers are tools that help to link new material that needs to be learned with the existing related knowledge and concepts. They are very useful when the new information is difficult and confusing.

We can reach this goal by satisfying two conditions:

- First, the student needs to understand the information that is presented in the graphic organizers so that it will be helpful in enhancing learning.
- Second, graphic organizers must show the relation among the concepts and terms.

Ausubel divides them into two categories: comparative and expository.



- Comparative organizers activate existing schemes, and they are also used as tools that help to remember things that seem to be not relevant. They help to discriminate and integrate new concepts and ideas.
- Expository organizers introduce new information that students need to understand and learn. These organizers are usually used when the information is new and unfamiliar to the learner. Its aim is to make the new information more manageable to the learner (qtd. in “Fpmipa” 2).

2.2.1 GRAPHIC ORGANIZERS

According to Meyen, Vergason, & Whelan, graphic organizers help children link new information with the previous schemes of knowledge they already have. Graphic organizers are “visual displays teachers use to organize information in a manner that makes the information easier to understand and learn” (qtd. in Dye 132).

Dye states that graphic organizers have their bases in schema theory which says that teachers need to relate children’s prior knowledge to the new information presented. Therefore, right connections between what is being taught and the child’s prior knowledge must be built in order to remember the new information for later use. Robert Stalvin says “Information that fits into a (student’s) existing schema is more easily understood, learned, and retained than information that does not fit into an existing schema” (qtd. in Dye 1).

Graphic organizers are closely related to the cognitive approach, the theory that studies the process the brain carries out when it is acquiring new information. The brain follows some steps to store information in the short and long-term memory. According to cognitive theory, children are bombarded with



a lot of information; this information enters the sensory register. This is the point when the child decides if the new information is going to be processed or not. When the new information is to be remembered, the learning process continues until the information can be used by the child. Children need to rehearse this recall of information in order to send it from the short-term memory to the long-term memory (Dye 2).

According to Slavin and Mercer, memory is divided into three parts: procedural memory, episodic memory, and semantic memory. The first one stores information that indicates how to do something, the second one stores personal information, the last one stores information differently: it uses networks to connect ideas and show the relationship between them (qtd. in Dye 2).

Dye in her article mentions some beneficial uses of graphic organizers at different stages of education. In early childhood, graphic organizers can be used to classify episodes or events, to explain connections in stories, and to help children understand the meaning through key pictures and words (2).

Therefore, graphic organizers can be a powerful tool to help students enhance knowledge based on the Brain-Based Learning Theory. According to McDermott, “graphic organizers can help children learn that their words and ideas are important, that print has meaning, letter recognition and letter/sound association, and to organize information graphically and become visual learners” (30). Therefore, through graphic organizers, children can relate what they are learning and what they are thinking to consolidate the new information in their brain.

In a study conducted by Maryam Mohammadia, Mahdi Moenikiab, and Adel Zahed-Babelanc, the authors suggest that graphic organizers can have an



important role to play in learning English as a second language. The participants of this study were 141 students in four classes that were selected from 31,000 students in Ardabil city high schools in the academic year of 2008-9 via random sampling. The participants were placed in two groups: experimental and control. The experimental group contained 65 subjects while the control group contained 76 subjects. The research method used in this study was quasi-experimental and the research design was pre- and post-test using a control group. The participants were evaluated at the beginning of the study with a criterion-based exam. After that, the experimental group was taught using graphic organizers. The instruments used in the application of this study were picture words, block-words and semantic mappings. When the instruction finished, the post-test was performed in both groups. That data was analyzed by using an independent two-group test that indicates to what extent advance organizers promoted English language learning as a second language. They came up with the results that graphic organizers can be viewed as cognitive and language tools. As cognitive tools, they are used to organize information and ideas (Dye, 2000). O'Donnell and Wood assert that one of the major principles of comprehension is that organizing and classifying new information facilitates understanding and remembering. As language tools, graphic organizers not only emphasize semantic relationships, but also offer opportunities for the learners to exercise the use of language(4669, 4670, 4671).

2.3 BRAIN-BASED LEARNING THEORY

The authors of Brain-Based Learning Theory (BBLT), Politano and Paquin say that it is important for teachers to know how learning physically



affects the brain. Therefore, teachers should have a clear perspective about the knowledge students are acquiring (qtd. in Reed 39). Renate and Geoffrey Caine in their work about Brain-Based Learning Theory, point out that “the brain does not easily learn things that are not logical or have no meaning” (44). Thus, students have to learn things that are significant and have a sequence, because they need to link that information to other pieces of information; consequently, it is necessary to follow patterns that allow the adequate process of knowledge (Renate and Geoffrey Caine 44). Many years ago, in traditional ways of instruction that followed a teacher-centered model, students had to memorize information. Students had to absorb information without having to process it. In other words, information was manipulated by the students through imitation and repetition. In order to know if students achieved the amount of knowledge contained in the curriculum, traditional tests were taken based on quantitative data rather than qualitative data (Renate and Geoffrey Caine 44).

As opposed to this, the main purpose of Brain-Based Learning Theory is that teachers can help students to see the meaning of the new information they are providing; as Politano and Paquin said “we expect to see teachers and students using stories and complex themes and metaphors to link information and understanding” (39).

A study done by LilibethLago and SirinthornSeepho suggests that Brain-Based Learning activities have a big effect on vocabulary learning and retention for second language learners. The participants of the study were 31 third-year undergraduate students taking English for tourism. This study was a pre-experimental research design. The researchers used three instruments. A vocabulary test was used at the beginning which was composed of 30 words



that students needed to their job. A pre-test and post-test were administered to the students to measure the vocabulary they learned during the application of Brain-Based Learning Theory. A pre-test and a post-test were applied as well as a delayed post-test three weeks after the initial post-test to measure the retention of the new words the students had learned. They used lesson plans designed for twelve hours of instruction. These were designed based on the twelve principles of Brain-Based Learning Theory. Finally, a semi-structured interview was conducted (1).

The results of the study showed that students learned many target words using Brain-Based Learning activities. The pre-test and post-test showed that Brain-Based Learning activities were effective in vocabulary acquisition. Based on the delayed test, it can be said that vocabulary retention increased using this method of teaching new vocabulary to second language learners. In the interview results, students expressed their good feelings about remembering and learning new vocabulary. However, some students showed some disappointment because they could not remember all the words they were taught because of the lack of time for using the new words. It is understood that they were not able to store them in their long-term memory. Nevertheless, these results showed clearly that 90 % of the students could retain the new vocabulary perfectly. Moreover, Brain-Based Learning activities helped to create a good learning environment for students which lead to better retention of words (Lago and Seepho 3- 4).

In conclusion, this study suggests that Brain-Based Learning Theory is effective not just with children but young adults, too. Therefore, this study is taken as evidence to support the research. Brain-Based Learning activities are



helpful to motivate students with the purpose of achieving the full potential of learning a language (Lago and Seepho 5).

Over the past years, education and neuroscience have become fairly close to each other. “With the evolution of brain imaging technology, we can study intimately the human’s brain even while working, thinking, and learning and its association with the education domain” (Moghaddam and Araghi 55).

Alireza Navid Moghaddam and Seyed Mahdi Araghi, in their article called Brain-Based Aspects of Cognitive Learning Approaches in Second Language Learning, point out that learning involves the use of both sides of the brain. The connection of the structures and functions of the brain as well as genetic and environmental factors influence learning (55).

According to Moghaddam and Araghi, educators nowadays are giving more importance to neuroscience because it provides a different way to see how the brain works. Brain-Based Learning Theory builds on the biological and physiological foundations to enhance learning. There are twelve mind / brain learning principles that must be kept in mind in order to learn successfully (55).

1. The brain is a parallel processor.
2. Learning engages the entire physiology.
3. The search for meaning is innate.
4. The search for meaning occurs through “patterning”.
5. Emotions are critical to patterning.
6. The brain processes parts and wholes simultaneously.
7. Learning involves both focused attention and peripheral perception.
8. Learning always involves conscious and unconscious processes.



9. We have at least two different types of memory, a spatial memory system and a set of systems for rote learning.

10. We understand and remember best when facts and skills are embedded in natural, spatial memory.

11. Learning is enhanced by challenge and inhibited by threat.

12. Each brain is unique

(Caine & Caine, 1991, pp. 80-87).

Wolfe quoted in Moghaddam and Araghi states that the brain is active to learn in any moment, because it is always paying attention to something consciously or unconsciously. He argues that when a learner is not paying attention to what the teacher is teaching, he or she is paying attention to something else. People generally pay attention to the unusual that is the reason why teachers have to take advantage of that and create surprising and novel classes (56).

Sylwester quoted in Moghaddam and Araghi, believes that emotion drives attention and attention drives learning. "Mind and emotions are not separated but rather emotions, thinking, and learning are all connected" (57). The brain primarily pays attention to information that has a strong emotional content. Therefore, educators have to be aware that emotions have a strong impact on learning.

As a conclusion, Brain-Based Learning Theory looks for a general view of the learner in order to activate the brain, and learners can learn effectively using optimally all the sources that it has.

According to Suzie Boss, it is important to understand how the brain works because "educators are better equipped to help students with everything



from focusing attention to increasing retention” (2). Bringing this information to the classroom can help teachers engage diverse learners, offer effective feedback that leads to deeper understanding, and create a rich learning environment that attends to students’ social and emotional needs along with their development in their brains.

Prior knowledge must be activated when a topic is introduced. That helps learners build on what they already know strengthening connections in the brain. The use of graphic organizers helps students represent their thinking visually, kinesthetically, and phonetically. All these strategies are important in order to enhance learning (Boss 2).

In her article, Boss gives some tips to enhance learning by knowing how to improve brainpower.

- **Create a Safe Climate for Learning:** when students are feeling anxious or fearful, they are not in the mood to learn. That is because one part of the brain that processes emotions—the amygdala—responds to perceived threats by blocking information flow to the learning centers of the brain. Veteran teacher Linda Lantieri, author of *Building Emotional Intelligence*, recommends concrete strategies to help students stay calm and learn to manage their sometimes tumultuous emotions (Boss 3).

- **Encourage a Growth Mind-set:** Children who adopt what psychologist Carol Dweck calls a growth mind-set understand that intelligence is not fixed but can be developed through effort. In *Mindset*, Dweck explains why students who have a growth mind-set are more willing to tackle challenges, learn from failure, and see criticism as useful feedback rather than a reason to give up. This is the kind of thinking that keeps students motivated, even when



learning is hard work. A growth mind-set can be learned and reinforced by messages that praise persistence and set high expectations. Effective teaching strategies help students move toward higher-order thinking, or what neurologists call executive function. As neurologist turned teacher Judy Willis, MD explains, “When you provide students with opportunities to apply learning, especially through authentic, personally meaningful activities with formative assessments and corrective feedback throughout a unit, facts move from rote memory to become consolidated into related memory bank, instead of being pruned away from disuse.” (Boss 4)

- **Emphasize Feedback:** teachers use a range of formative assessment strategies to check in on understanding and address misconceptions early. Not surprisingly, feedback is a foundation of Brain-Based Learning. Understanding where and how they went wrong helps students adjust their thinking so they can improve. Positive feedback, meanwhile, builds learner confidence. Whether it’s corrective or affirming, feedback needs to be delivered in a way that is encouraging rather than discouraging (Boss 5).

- **Get Bodies and Brains in Gear:** Exercise boosts brainpower. Cardio activity increases oxygen-rich blood flow to the brain and increases students’ ability to concentrate. Acknowledging that more research is needed to fully understand the relationship between exercise and learning, Medina argues for incorporating more physical activity into the school day—now (Boss 6).

- **Start Early:** Formal schooling may not start until age five, but we all know children are learning long before they begin kindergarten. By reaching out to parents of preschoolers with research and practical information, schools



can help incoming students arrive at school ready—and eager—to learn (Boss 7).

- **Embrace the Power of Novelty:** When we encounter new information, the brain quickly goes into pattern-recognition mode. If it reminds us of something we've encountered before, we know how to respond. The brain needs novelty. In the classroom, this means that changing routines, asking students to consider similarities and differences, field trips, and guest visitors all help to keep learning fresh (Boss 8).

A thesis done by Sue-Fen Chang suggests that Brain-Based Vocabulary Learning Strategy instruction helps to maximize second language learners' efforts in the acquisition of new vocabulary. This study was carried out in a Municipal Senior High School in the Taipei area. The participants were 115 eleventh-grade students who were divided into two experimental groups and a control group (3). The number of students per group was 38 in group A and in group B, and 39 for group C. This was a quasi-experimental design study. The researcher used a pre-test in the three groups of students, two of them were the experimental groups and the third one was the control group. The three groups were evaluated with the post-test at the end of the experiment to find out the results (Chang 112, 113). Three different kinds of instructions were applied with the purpose of teaching the new vocabulary to the students. The control group was taught with the traditional method. According to Chang, it is a non-strategy-based instruction where the teacher translates the new word into the student's native language (114). A Brain-Based Learning Strategy instruction was used in the two experimental groups (114). A vocabulary achievement test was taken at the end of the study to discover if the students had learned the new words they



studied in that research program. Qualitative and quantitative methods were used to analyze the data (Chang 3). The results of the study showed that Brain-Based Vocabulary Learning Strategy instruction helped to create a better classroom atmosphere whilst developing a positive and active response from the students who were taught by this method. Moreover, it helps to enrich learning with materials and techniques in the way teachers teach vocabulary giving the students the opportunity to improve their vocabulary acquisition while learning a second language. Therefore, students who were taught with this method got higher grades than the ones who were not. In conclusion, Brain-Based Learning Vocabulary Strategy instruction facilitates students' word learning, therefore, it raises students' interest in learning new English words. The above study suggests that Brain-Based Vocabulary Learning Strategy instruction can maximize second language learners in vocabulary acquisition (Chang 116).

In an article titled ABC's of Brain-Based Learning and written in 2007 Dr. Dave Kommer pointed out some factors that influence people' learning. He stresses that each person is different and the way how he/she learns is also different. For that reason, it is important to know how the brain works in order to have an overall perspective of how people can learn effectively (1).

The first factor that is mentioned in the article is the atmosphere. It is essential to have a good environment where learning can occur and students feel comfortable to learn (Kommer2).

Activities and movements that help the whole brain work, are at the core of learning. An activity that is commonly used for brain fitness is 'Brain Gym®'



that “can increase blood flow to the brain, which helps improve memory, concentration, physical coordination, and organization” (Kommer 3).

Choice is another factor that can help students feel that they are responsible for their learning. Students need to have a sense of freedom in their learning (Kommer 4).

The differences among students also influence their learning. It is known that girls and boys have different tastes, so different activities must be performed in class in order to satisfy different perspectives (Kommer, 5).

Emotions are also important because they motivate students who must feel motivated to learn. “Emotions motivate everything we do and impact student behavior, memory, attention, and meaning” (Kommer, 6).

Brain-Based Learning Theory helps to understand how the brain works and learns better. According to this theory, some principles need to be applied in the classroom to improve second language learning; along with this, learning strategies must be implemented to achieve this goal.

2.4 LEARNING STRATEGIES

Learning strategies are stages that students take and develop over time. These are very important in language development because with them students can develop communicative competence (Oxford 1).

According to Rebecca Oxford the term strategies come from Greek. This term means art of war that can be interpreted in language acquisition as planning, conscious manipulation, and movement toward a goal. The term over time began to refer to learning strategies which are actions that students take in



order to make their own learning “easier, faster, more enjoyable, more self-directed, more effective, and more transferrable to new situations” (8).

Rebecca Oxford divides the strategies into two categories. The first one is called direct and the second one indirect. These two groups of strategies support each other and both are necessary to language acquisition. Direct strategies are used to deal with the learning of the new language and are divided into memory, cognitive and compensation strategies. On the other hand, indirect strategies are the ones used for general management of learning and are metacognitive, affective, and social strategies (14, 15). Direct strategies require that second language learners make mental processing while they are learning the second language. All the three direct strategies already mentioned do this processing differently and with different objectives. For the purposes of this study, memory strategies were chosen to explain the ways to help students to store and retrieve new information by Creating Mental Linkages, Applying Images and Sound, Reviewing Well, and Employing Action. Moreover, learners use memory strategies to arrange things in order to make associations, and to review information. To achieve the learning of a second language, the classroom activities and the students’ experience need to be connected (Oxford 37, 38, 39).

Memory strategies associate different materials. Learning a new language involves linking pictures with words, creating visual images of words and phrases. It is useful to link the visual with the verbal because of the following reasons: first, the mind can store more visual than verbal information. Second, the most efficient information is transferred to long-term memory through visuals. Third, visuals are the most important tools that help students to



remember. Finally, a lot of learners prefer visual learning. Even though memory strategies are very helpful in the process of learning a second language, many people do not use them or at least they do not figure out how to use them to get benefit in their learning (Oxford 40).

Oxford points out that many teachers used to think that learning vocabulary is an easy task; however, she argues that second language learners have many difficulties when they need to retrieve a great amount of new words to develop fluency. Therefore, memory strategies help learners to cope with this problem of vocabulary learning. They assist students to store words and bring them back when they are needed for oral communication. In addition, memory strategies for reviewing helps students to move the information from the fact level to the skill level where students can use this new information automatically (39).

The second group of strategies that Oxford mentions under the group of direct strategies is cognitive. These strategies are the most common in language learners. They help second language learners in the management and change of the target language. These strategies are divided in four sets: Practicing, Receiving and Sending Messages, Analyzing and Reasoning, and Creating Structure for Input and Output. She points out that the strategies for practicing are the most useful ones even though students do not appreciate how important they are. A fair amount of practice is lost in class because some students recite and others do not. It is always necessary to have more practice and it does not matter if it is only a small group of students that do it. To reach proficiency and fluency in a second language the learner needs thousands of



hours of practice. Research has shown that natural practice is important at all levels of language learning (43).

According to Berk, memory strategies can be divided into two groups: short-term memory strategies and long-term memory strategies. Within the short-term memory we have rehearsal: this means repeating with the purpose of remembering. Children between 5 and 10 years old quickly develop this strategy, but there may be individual differences as to how this is applied. Another strategy is organization; this strategy helps children internalize new information meaningfully, so it can be better remembered. The last strategy cited in this group is elaboration; it means extending the meaning of the new information which is more easily remembered in this fashion (qtd. in Inter 27, 28, 29).

Long-term memory strategies are the following: recognition which implies a realization if an image or concept is similar or different from other information. Recall means generating a mental image of something that is not present. Finally, reconstruction is the process of recalling and interpreting information (Inter 27).

According to the Information Processing Approach, attention in children develops over time. When children are growing, they pay more attention to specific tasks. Children from 3 to 5 are not able to pay attention efficiently on what they have to do, because there are many distractions while doing the task, hence they cannot easily identify differences. Therefore, they do not like to work on activities that involve spot the differences or problem solving puzzles. In contrast, older children are able to use systematic strategies such as examining and comparing effectively (qtd. in Inter 27).



Children develop examining and comparing strategies with age. They help them a lot in the learning process, however, to master them children need a lot of time and practice. Older children and adults remember information better by relaying in their “fuzzy trace memory”. According to Brainerd and Reyna it means that people create a vague gist where they can concentrate on essential information avoiding the non-essential details, thus trying not to remember word by word, just the important information (Inter 27).



CHAPTER 3

METHODOLOGY

For the purposes of this study, we are going to use a qualitative research. It is an interpretative analysis of the data. Mackey and Gass states the following characteristics of qualitative research:

- Naturalistic and controlled observation
- Subjective
- Discovery oriented
- Process oriented
- “Soft” data
- Ungeneralizable, single case studies
- Assuming a dynamic reality
- Close to the data (2)

Qualitative research is considered rich because it provides a wide and detailed description of the study. Moreover, it is applied in a natural and holistic setting which contains few participants because it avoids generalizability.

Qualitative research is cyclical and involves open-ended processes, which means that the research context will emerge through the observation of everything that is presented in the class. This research can be termed critical because the researcher can include in the project his own ideologies (Mackey and Gass 162,163,164).

An experimental study was employed in order to collect the data. A pre-test-post-test control group design was used. According to Mackey and Gass, in many second language studies, a pre-test is given to a certain group to have an overview about their prior knowledge before a treatment, and after it, a post-test



is given to the same group to see if the treatment has affected the students' learning (148-49).

The children were assessed at the beginning of the research with pictures and we recorded a video to analyze the data and match with the results. During the research, graphic organizers were used in order to prove that the theory and the tool used in this research indeed helped children to store and retrieve information. At the end of the study, a post-test was applied to analyze the data. Finally, an analysis of the whole study was carried out followed by the conclusions.

For this study, the observation technique was used for the collection of the data. According to Mackey and Gass, the observation technique is often used in second language classroom research studies as a means of gathering data.

3.1 Participants

The participants chosen for this study belong to the kindergarten level of Rayitos de Luz Elementary School "CERDEL" which is a private institution located in Cuenca. The philosophy of this school is to educate children to become teenagers of the future with a wide intellectual capacity, and with a logical, critical, and creative mind while having respect to diversity, developing values and sensibility to the human being. The school attaches great importance to English because it sees English as a fundamental part of an individual's education and culture.

The sample used for the study was a non-random group since the whole class of 14 students participated. In socioeconomic terms the participants have a



middle-class background. As we can see in Table 1, there is a wide range of ages, which will be analyzed later.

List of Participants			
#	Student	Gender	Age
1	PC	FEMALE	3 YEARS OLD
2	EC	FEMALE	3 YEARS OLD
3	DT	MALE	4 YEARS OLD
4	LM	FEMALE	3 YEARS OLD
5	AV	MALE	3 YEARS OLD
6	SP	FEMALE	4 YEARS OLD
7	JP	MALE	5 YEARS OLD
8	DR	MALE	5 YEARS OLD
9	RQ	MALE	4 YEARS OLD
10	JB	MALE	5 YEARS OLD
11	MR	MALE	4 YEARS OLD
12	EVE	FEMALE	4 YEARS OLD
13	EMY	FEMALE	3 YEARS OLD
14	PA	FEMALE	5 YEARS OLD

Table 1. Participants and their ages and gender

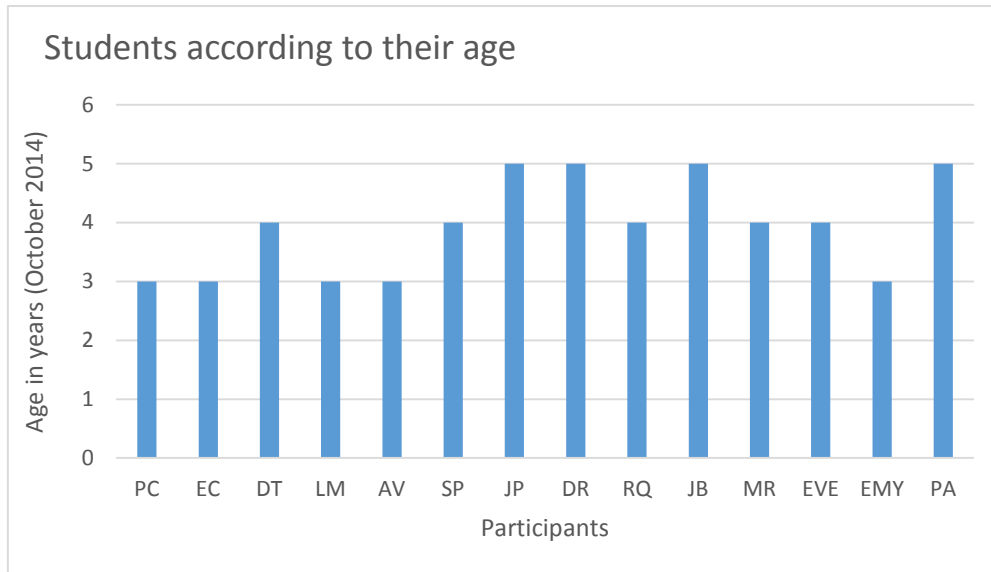


Figure 1. Participants and their ages

The participants' ages ranged from 3 to 5 years old. There were 7 girls and 7 boys. The participants had a grade teacher, but they did not have an English language teacher. The textbook they used to study English was 'Enterprise' but not everybody had one. The children's level of English before the treatment was very low. Percentages will be presented later.

3.2 Materials

The English textbook was not used because not everyone had one.

Therefore, we designed our own lesson plans and materials.

Fifty-nine target words and communicative phrases were selected according to the aims of each lesson plan. Moreover, each lesson plan was designed according to the age and level of the students to achieve the children's improvement of vocabulary. The vocabulary words used in the lesson plans were: *Good morning students, How are you?, Fine thank you teacher, Hello, Hi, Doing fine teacher, Thank you, good afternoon, good night, dog, cow,*



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duck, horse, sheep, pig, What do you see?, What do you hear?, There is, There are, red, yellow, blue, white, black, What day is it today?, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, What is this/that?, This/ That is, head, shoulder, knees, toes, eyes, ears, mouth, nose, He is / she is, Mother, Father, Sister, Brother, Baby, Santa Claus, presents, Christmas tree, lights, bulbs, candies, snowman, snow. It is big, small.

Graphic organizers were used to introduce the new vocabulary. The graphic organizers were designed to help students relate and connect the new words with the meaning. They contained pictures, signs, rows, circles, squares that generally help children organize their ideas and remember the target words. Each lesson contained a different graphic organizer which was colorful and attractive to draw the children's attention. The graphic organizers were used during the whole class primarily for introducing the vocabulary, and also for guiding children in other activities like following instructions, following a story, singing songs, repeating the new words, drawing, and at the end of the class for reviewing.

Different tools were used for achieving the aim of each lesson plan: a story, graphic organizers, pictures, costumes, whiteboard, a laptop computer, markers, crayons, pencils, erasers, sheet of paper, songs, animals' pictures, bingo charts, rhymes, chants, hoops, calendars, videos, flashcards, body puzzles, plasticine, and a Christmas tree drawing, all of which contributed to make the class environment more interesting and enjoyable.

A videotape recorder was used to record each class in order to follow the process of the treatment and to collect and analyze data that is not easy to remember or observe at the moment of the application of the methodology.



3.3 Treatment

A pre-test was applied to the participants of the study before the treatment to determine the children's knowledge of English. Pictures were used as tools to evaluate the children's knowledge. A video was made to record the data after the application of the pre-test.

On October 16, 2014, the pre-test was applied in Rayitos de Luz Elementary School in the kindergarten group. All the thirteen children were in class. The children looked at 23 pictures that were selected randomly from the vocabulary treatment. The researchers started to ask questions in the children's native language to find out if they knew those words in English. Most of the children named the pictures in Spanish; only two children knew the words in English like numbers up to 5 and the names for some colors.

According to Brain-Based Learning Theory and using Graphic Organizers as tools the class was planned as follows:

Day 1. Hello teacher! (Lesson plan 1). On October 29, we started the treatment. There were 13 children in the class. The time used for the treatment on the first day was 60 minutes, from 11 am until 12 pm. The class started with some questions about the topic. Then a warm up activity was done to create a pleasant environment. Next, the new vocabulary was introduced through a graphic organizer which contained pictures of the sequence of a story. Some children were paying attention to the story; however, some of them were not. After that, the children responded to a puppet's greetings. Finally, the children act out the story with the help of the teacher-researchers.

Day 2. Farm animals (Lesson plan 2). On October 30, there were 13 children present. A warm up activity was done at the beginning of the class.



Children were introduced to the new vocabulary through pictures. A graphic organizer that shows the new vocabulary was presented. Children pointed to the animals in the graphic organizer while repeating and pronouncing. Then, a song was used to complement the new vocabulary learning. Children were singing the song enthusiastically. While singing the song, the children used their graphic organizer to identify and connect the new words with their meaning by pointing to the pictures. Then, they drew their favorite farm animal. Not all of them could draw; therefore, they were helped to complete the task. Finally, the children acted out a role play to practice their communicative skills.

Day 3. Five little ducks (Lesson plan 3). On November 5, all thirteen children were there. The class started singing a 'Good Morning, Teacher' song. Later, a warm up activity was done. Then, a graphic organizer was given to each child which showed the new vocabulary to be learned. After that, a nursery rhyme was used to complement the new vocabulary learning. While singing the rhyme, the children were pointing to the pictures in the graphic organizer to identify and connect the new words with their meaning. To practice the new vocabulary learned, they played a game called the 'number code game'. Some squares containing numbers from 1 to 5 were cut out and put in a box. Then, each child took a square and placed the number in a line as the teacher called them out. Finally, the children used 'there is' and 'there are' to describe the graphic organizer. However, most of them were not able to use 'there is' and 'there are' by themselves.

Day 4. Red lorry, Yellow lorry (Lesson plan 4). On November 6, all thirteen children and a new student were present. The class started singing a 'Good Morning, Teacher' song. Next, a warm up activity was done. Later, the



names of the colors were presented through a graphic organizer and a hand out was given to each child. Then, a tongue twister was used to complement the new vocabulary learning. Not all the children repeated the tongue twister, because they were not paying enough attention. After that, the children painted their fingers with color paint so they could put their colored hands according to the right color on a cardboard. Finally, they answered questions using the graphic organizer.

Day 5. Today is Sunday! (Lesson plan 5). On November 12, all the fourteen children were present. The teachers started the class with short questions about the topic. Some children know the days of the week in Spanish, but not all of them. The children were very active on this day. Some children were fighting among themselves at the beginning of the class. It was difficult to get the children's attention at the beginning. Next, a warm up activity was presented. When the teachers showed the vocabulary through a graphic organizer, they could get the children to pay attention to the topic. They became more interested because of the emoticons that the graphic organizer contained. Then, a chant was used to complement the new vocabulary learning. Children pointed to the days of the week while they were practicing the chant. They enjoyed that activity a lot. Most of them were doing this activity.

As part of the sequence of the lesson, children drew the activities they usually do during weekdays and on the weekend. First, the teachers drew on the board to help them recognize some weekday and weekend activities. Four and five- year old children could draw; however, three-year old children were not able to, but the teachers helped them with the task.



Day 6. My body (Lesson plan 6). On November 26, all fourteen children were there. The teachers started the class with short questions about the topic. The children were willing to participate; they were active and paying attention. Next, a warm up activity was presented. A graphic organizer that showed the new vocabulary was introduced. Children were asked to repeat body parts in English while they pointed to them in the graphic organizer and also used their own body to identify their parts. As a result, children related the non-linguistic representations shown in the graphic organizer with their own body. Then, a video song was used to complement the new vocabulary learning. The children sang a song while watching a video about their parts of the body. Some children were just watching and singing, but others were performing the actions. We repeated the song three times because children liked it a lot. At the third time almost all the children were singing and responding to what they heard. Finally, the children solved a puzzle in groups. They liked this activity; they were very competitive and self-centered. We formed two groups; one group for the boys and the other for the girls. The boys were fighting at the beginning because each of them wanted to solve the puzzle on their own. The girls were more cooperative among themselves. However, the boys were able to solve the body puzzle first without any help. Finally, the children made a body of plasticine and described its body. They were very participative in this activity. Some children could not make the body so some help was provided.

Day 7. My Family(Lesson plan 7). On November 27, all the fourteen children were present. The teachers started the class with short questions about the topic. The children liked to talk about their families. Next, a warm up activity was presented. A graphic organizer that showed family members was



introduced. Children pronounced the new words they were learning while they observed the graphic organizer. Some children were not paying attention because they were fighting for some toys. Children related what they saw in the graphic organizer to the mother goose that was presented in a video. The children started to concentrate more when they listened to the mother goose. They pointed to the new words while they listened and watched the video. Then, the children recognized family members while they cut and stick them in the right place. Some children needed a lot of help during this activity. Finally, they made a picture frame where they had to stick their family photograph. They were willing to work with the picture frame. Most of them needed help to make it. Only one child brought a family picture to the next class.

Day 8. Christmas coming to town! (Lesson plan 8). On December 4, all fourteen children were present. The teacher started the class with short questions about the topic. The children were not paying attention. Half of the class was playing. Some children were fighting and walking around in the class. They were a little tired. Next, a warm up activity was presented. A graphic organizer that showed the new vocabulary was introduced. The children related what they saw in the graphic organizer with a song. The children started pointing out, however, they could not relate the whole vocabulary that the graphic organizer contained to the song because the song did not have the whole vocabulary. That is the reason why the children became confused and bored. After the children recognized Christmas words while they played a game called 'Missing Flashcards'. They were more attentive in this activity and enjoyed it. Some children could recognize the missing flashcard but others could not. Only few students said the words in English. Most of them were



naming the flashcards in Spanish. For that reason, we encouraged them to name the Christmas vocabulary in English. Finally, the children described the graphic organizer using “big and small”. Many children could differentiate between big and small, only few students could not.

Each lesson plan is suggested to be applied in 60 minutes of classes. Children in Rayitos de Luz Elementary School had two hours of English per week, one hour on Wednesday and one hour on Thursday.

The lessons took place over a total of 10 days from October 16 to December 4, 2014. A final evaluation took place on December 18, 2014.

Table 2 shows the treatment chronogram when the BBLT and graphic organizers for improving learning vocabulary were applied.

Chronogram	
Month	Day
October	16 - 29 - 30
November	5 - 6 -12 -13- 26 – 27
December	4

Table 2. Dates of BBLT and Graphic Organizer application

To start each class, the first thing we did was to create a good atmosphere. According to Brain-Based Learning Theory, one strategy to increase brainpower is to create a safe learning environment. For this purpose, at the beginning of each class, we did a warm up activity to gain confidence with the children who were not anxious or fearful about learning but were willing to learn. In addition, each class started with a good morning song to greet them.



Each lesson plan used a graphic organizer as the main tool for vocabulary learning. The purpose of graphic organizers is to help children remember information for later use. After the warm up activity, the graphic organizer was given to the children to introduce the new vocabulary listed down in the lesson plans. In that way, children related and organized ideas better in their brains. According to BBLT, the search for meaning is innate in children. That is the reason why the children used the graphic organizer to interpret and convey the meaning of words by themselves.

To practice the new vocabulary, each lesson plan contained activities to enhance learning. These activities are interesting and help focus the children's attention. A strategy that Brain-Based Learning Theory gives importance to is to embrace the power of Novelty. Changing routines and including different activities in each class increases the power of the brain because the brain needs novelty to remember better. Some of the activities that we included in our lesson plans were physical activities such as mimic songs and playing games. These activities, according to BBLT, increase oxygen in the brain, which helps children to concentrate.

After the practice activities, we included production activities. These kinds of activities help to connect the vocabulary learnt with real language use.

Finally, a review of the whole class was done. It is important to look for and provide feedback in order to check understanding and avoid misconceptions.

Assessment of the children was done by constant monitoring and by filling an observation sheet. A set of parameters according to the age and the level of the children were used to evaluate their progress.



3.4 Variables

There were some factors that affected the results of our research project.

- **Age:** First and foremost, there was the issue of age difference among the children. According to the information processing approach, children in different age groups will have developed different skills and different attention spans.
- **Time:** The application was done in a very short time.
- **Place:** The classroom was not well located. Children from other classes interrupted almost all the time and the children in the experimental group quickly lost attention.
- **Children assistance:** Some children were absent in some classes; therefore they could not have attained the same improvement in vocabulary learning as the others that were present in all the classes.
- **Tools:** The school does not have an audiovisual classroom. This made the treatment somewhat uncomfortable because we had to use a laptop computer and not all the children could see and hear the videos and songs appropriately.



CHAPTER 4

RESULTS: APPLICATION OF BRAIN-BASED LEARNING THEORY USING GRAPHIC ORGANIZERS FOR VOCABULARY IMPROVEMENT FOR KINDERGARTEN STUDENTS AT RAYITOS DE LUZ ELEMENTARY SCHOOL

This chapter will analyze the treatment carried out in order to find out to what extent graphic organizers supported by Brain-Based Learning Theory help children from 3 to 5 years old improve their vocabulary learning in English.

In order to gain a better understanding of what took place a complete class will be described first.

The procedure was as follows:

In the engage stage, the teachers entered the classroom and said Good Morning and the children responded cheerfully. They sang the song “Good Morning, Teacher” while clapping their hands. Next, a warm up activity was done. The children played a game. The teachers introduced the vocabulary through pictures and asked the children to repeat the words. They repeated the words as they were looking at the pictures. After that, the graphic organizer was given to each child. The children looked at the pictures in the graphic organizer. They pointed to the pictures in the graphic organizer while they were watching and singing a video song. The video song was played three times so they could repeat the vocabulary and get the right sounds. After that, in the study stage a practice activity was performed by the children. Finally, a production activity was accomplished in the activate stage.



In order to show the children's performance results, tables and graphics are presented to analyze the impact of this methodology on children. A brief explanation of each table and figure is provided.

The participants' results of vocabulary improvement are shown in Table 3.

The participants' results of vocabulary improvement			
	Student	Age	Percentage of improvement in vocabulary learning
1	PC	3 YEARS OLD	45%
2	EC	3 YEARS OLD	50%
3	DT	4 YEARS OLD	45%
4	LM	3 YEARS OLD	45%
5	AV	3 YEARS OLD	70%
6	SP	4 YEARS OLD	75%
7	JP	5 YEARS OLD	90%
8	DR	5 YEARS OLD	93%
9	RQ	4 YEARS OLD	65%
10	JB	5 YEARS OLD	97%
11	MR	4 YEARS OLD	83%
12	EVE	4 YEARS OLD	85%
13	EMY	3 YEARS OLD	48%
14	PA	5 YEARS OLD	90%

Table 3. The participants' results of vocabulary improvement using graphic organizers supported by Brain-Based Learning Theory



When analyzing the children’s performance in vocabulary improvement, we can observe that the application of graphic organizers supported by Brain-Based Learning Theory helps children to improve their vocabulary. We can see in table 3 that nine of the 14 participants have a performance that surpasses 70%.

A comparison of the pre-test and post-test results is carried out in Table 4.

Pre-test Results			
	Student	Age	Percentage of vocabulary knowledge in English before the treatment
1	PC	3 YEARS OLD	10%
2	EC	3 YEARS OLD	10%
3	DT	4 YEARS OLD	10%
4	LM	3 YEARS OLD	10%
5	AV	3 YEARS OLD	10%
6	SP	4 YEARS OLD	15%
7	JP	5 YEARS OLD	20%
8	DR	5 YEARS OLD	30%
9	RQ	4 YEARS OLD	15%
10	JB	5 YEARS OLD	40%
11	MR	4 YEARS OLD	40%
12	EVE	4 YEARS OLD	
13	EMY	3 YEARS OLD	10%
14	PA	5 YEARS OLD	10%

Table 4. Analysis of the pre-test results



	Student	Age	Percentage of vocabulary knowledge in English after the treatment
1	PC	3 YEARS OLD	45%
2	EC	3 YEARS OLD	50%
3	DT	4 YEARS OLD	45%
4	LM	3 YEARS OLD	45%
5	AV	3 YEARS OLD	70%
6	SP	4 YEARS OLD	75%
7	JP	5 YEARS OLD	90%
8	DR	5 YEARS OLD	93%
9	RQ	4 YEARS OLD	65%
10	JB	5 YEARS OLD	97%
11	MR	4 YEARS OLD	83%
12	EVE	4 YEARS OLD	85%
13	EMY	3 YEARS OLD	48%
14	PA	5 YEARS OLD	90%

Table 5. Analysis of the post-test results

Tables 4 and 5 show the differences in the children's performance before the treatment and after it. Most of the children at the beginning of the study had a very low level of English knowledge. During the treatment, all the participants improved their English vocabulary but to a different degree. In general, children had 16% of English knowledge at the beginning of the study as shown by the pre-test. After the treatment the children achieved a 70% improvement in their



English vocabulary. These results demonstrate that graphic organizers supported by Brain-Based Learning Theory help children learn new vocabulary.

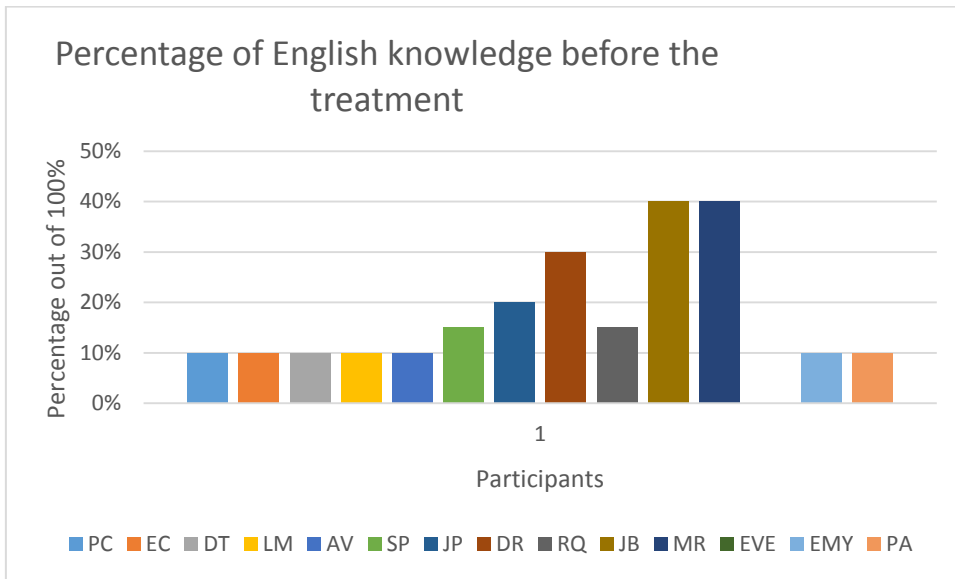


Figure 2. Results of the pre-test in English vocabulary

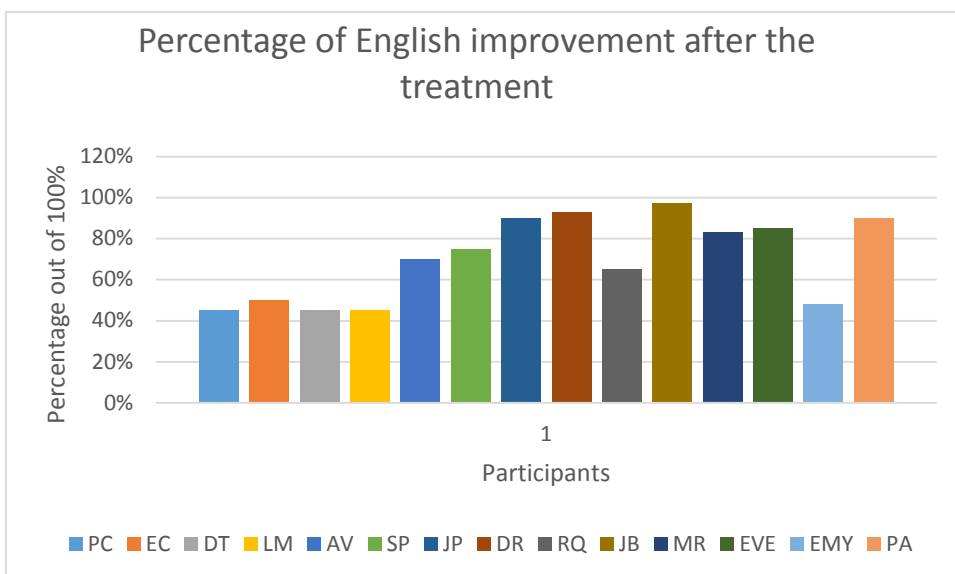


Figure 3. Results of the post-test in English vocabulary

Figures 2 and 3 show each participant with their percentage of English knowledge in vocabulary. We can notice that each participant improved.



The results of the children’s performance according to their ages are presented in table 5.

Results of vocabulary learning according to children’s ages.	
AGES	PERCENTAGE OF VOCABULARY LEARNING
3 Years Old	45%
4 Years Old	60%
5 Years Old	90%

Table 5. Results of vocabulary learning according to children’s ages

We could realize that there were some differences of improvement in vocabulary learning because of the fact that the span concentration of participants were not the same. After the treatment children from 4 to 5 years old had a good level of knowledge, but 3-year old children showed not significant improvement. Younger children did not respond to the treatment because they were not able to understand all the instructions. Moreover, they had not developed some skills yet, even though the teacher tried to help them, they showed little improvement. Children who were 3 years old were not able to follow the instructions and understand the graphic organizers. That is the reason why they have a lower percentage regarding their vocabulary learning.

Table 5 shows that 3-year-old children have an average of 45% of vocabulary improvement. Four year-old children have a higher performance than 3 year-olds. We can notice in the table above that the children’s progress is 60% on average. Finally, 5 year-old children have a better understanding of



graphic organizers, and they improved their vocabulary acquisition to a greater extent. A 90 % result corresponds to this group of children.

Figure 5. Results of children’s vocabulary improvement according to their ages

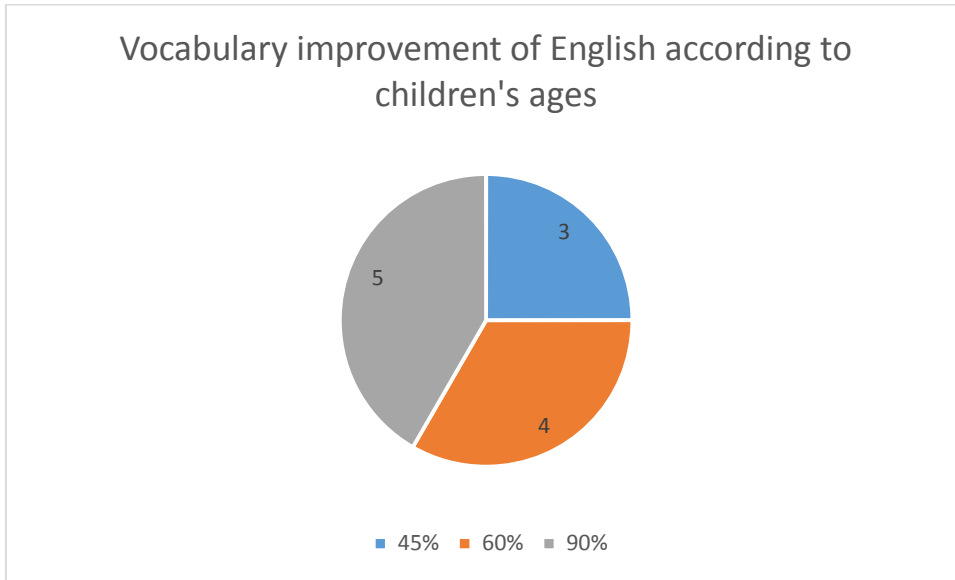


Figure 5 shows clearly the percentages of improvement in vocabulary learning of children at their different ages. Five-year old children have the highest percentage and, accordingly, in order to get good results graphic organizers should be used with this age group.

The results of the learning of vocabulary performance are demonstrated in table 6.

Results of the Vocabulary Learning			
	Vocabulary Words	Follows the Graphic Organizer	Percentage of the whole class
1	Good Morning	12	86%



2	How are you?	4	29%
3	Fine, thank you teacher.	4	29%
4	Hello	14	100%
5	Hi!	10	71%
6	Doing fine teacher.	2	14%
7	thank you.	10	71%
8	Good Afternoon.	4	29%
9	Good Night.	2	14%
10	Dog	12	86%
11	Cow	12	86%
12	Duck	12	86%
13	Horse	10	71%
14	Sheep	10	71%
15	Pig	10	71%
16	What do you see?	9	64%
17	What do you hear?	9	64%
18	One	12	86%
19	Two	12	86%
20	Three	12	86%
21	Four	12	86%
22	Five	12	86%
23	There is	2	14%
24	There are	2	14%



25	Red	10	71%
26	Yellow	8	57%
27	Blue	8	57%
28	White	8	57%
29	Black	8	57%
30	What is it today?	5	36%
31	Monday	8	57%
32	Tuesday	8	57%
33	Wednesday	8	57%
34	Thursday	8	57%
35	Friday	8	57%
36	Saturday	8	57%
37	Sunday	8	57%
38	What is this? / What is That?	2	14%
39	This is	2	14%
40	That is	2	14%
41	Head	12	86%
42	Shoulder	12	86%
43	Knees	12	86%
44	Toes	12	86%
45	Eyes	12	86%
46	Ears	12	86%
47	Mouth	12	86%



48	Nose	12	86%
49	She is	2	14%
50	He is	2	14%
51	Mother	12	86%
52	Father	12	86%
53	Brother	6	43%
54	Sister	6	43%
55	Baby	10	71%
56	Santa Claus	12	86%
57	Presents	6	43%
58	Christmas Tree	4	29%
59	Lights	4	29%
60	Bulbs	2	14%
61	Candies	2	14%
62	Snowman	2	14%
63	Snow	2	14%
64	it is big / it is small	2	14%

Table 6. Results of the vocabulary learning in the post-test and the number of children that responded positively

In view of the data, we can conclude that not all the children could learn the whole vocabulary that was presented in each lesson. Most of the participants could understand, but not use each word properly. The principal factor that affects our study and the reason why children could not learn was the number of words in each lesson. There were 64 words including some communicative phrases. Children could relate the meaning of pictures and



signs easily using the graphic organizers. However, retrieving the new words in later use created some difficulty. We can notice in Table 5 that phrases such as:

Good morning had 85% of improvement. Participants learned this greeting easily because they practiced it every day. Moreover, a song was used to reinforce its learning. Children loved to sing the song in every class. On the other hand, greetings like **how are you? Fine, thank you teacher**, had 29% of improvement. These phrases were harder to remember and recall due to the fact that they were not practiced properly because there was not enough time to do so.

Hello was a word that got a percentage of 100%; it is because it was a word that some students already knew, moreover, it was practiced every day as opposed to **Hi**, which had 71% improvement. Children started to use “*hello*” instead of “*hi*”. Most of the participants understood the word, but they did not use it frequently; they preferred to use hello. **Doing fine, teacher** had 14% improvement. This was a phrase that children could not learn; they did not remember or use it.

Thank you had 71% of improvement. This phrase was not easy to learn because they could not easily match the abstract idea with an image.

Good afternoon had 29% and **Good night** 14% improvement. These were phrases that most of the children did not learn because they were not practiced and used everyday. Children had classes only in the morning and **Good Morning** was the phrase that they used more frequently due to the time of the day.



Dog, cow, and duck had 86% of improvement. Most of the children learnt these words because they could relate the meaning to the graphic organizer and with the context. Nevertheless, **horse, sheep, and pig** have 71% of improvement because these words were not easy for children to learn and relate to their context.

What do you see? And **What do you hear?** had 64% of improvement. These phrases were not used by the children, however they could understand their meaning.

One, two, three, four, and five have 86% of improvement. These words were easy to learn and some children already knew these words and they could easily grasp the meaning. However, **there is** and **there are** had 14% of improvement. The children were not able to relate these words to the meaning, therefore they could not use them.

Red had 71% of improvement, meanwhile, **yellow, blue, white, and black** had 57% of improvement. Red was easier to remember than the other colors.

What day is it today? had 36% of improvement. This communicative phrase was understood by some children but not everyone could use it.

Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday have 57% of improvement because they could understand them at that moment, but they could not remember them for much longer.

What is this/that? and **This is / That is** have 14% of improvement. Only some of the older children could understand them, but they could not use them.

Head, shoulder, knees, toes, eyes, ears, mouth, and **nose** have 86% of improvement. Children related these words with the meaning using the graphic organizers and with their own body.



He is and **she is** had 14% of improvement. These phrases were not practiced properly because the children were not attentive, that is why they could not learn them.

Mother and **Father** had 86% of improvement. These two words were easy to relate with the meaning because they were practiced a lot. **Sister** and **Brother** have 53% of improvement. These were not so easy to relate with the meaning because most of the children do not have brothers or sisters. Therefore, they could not relate to their own context. However, **baby** had 71% of improvement because this word is heard commonly.

Santa Claus had 86% of improvement. This word was easy to learn because of the context. The lesson plan was applied at Christmas time. **Presents** had 43% of improvement. **Christmas tree** and **lights** had 29% of improvement. **Bulbs, candies, snowman, snow** and **It is big, small** had 14% of improvement.

Those last words have a low percentage of improvement due to the fact that most of the children were not attentive and we had discipline problems that day.

With the purpose of providing detailed information about the results of the application of graphic organizers supported by Brain-Based Learning Theory, an individual analysis of the performance of each student during the 8 classes is provided below.



PARTICIPANT 1: Age 3 years old

The child was shy and she did not participate too much in class. She did not have a long span of concentration. She needed a lot of help from teachers. At the beginning of the English classes she showed a low level of English vocabulary. However, through time she started to improve a little. She started to gain confidence and became active in class. She understood the graphic organizer of the day and liked to participate in games and followed instructions when she understood them. She needed to be spoken to in Spanish almost all the time.

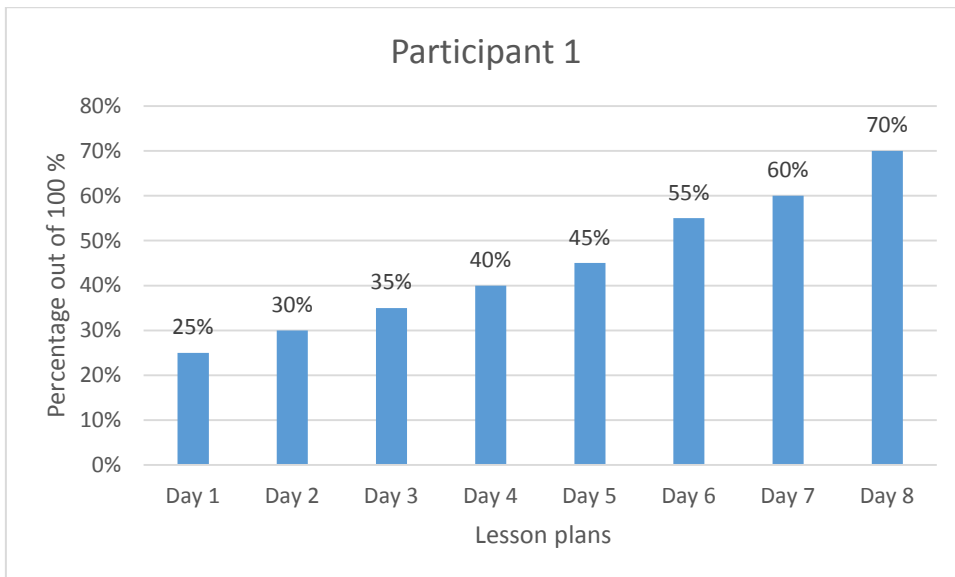


Figure 5. Performance in percentage during the eight English classes



PARTICIPANT 2: Age 3 years old

This participant had a short span of concentration. She was not too participative. She liked singing and playing games. She was not able to complete all the tasks; she needed to be helped by the teachers. She understood graphic organizers and followed them when the teachers asked her to do so. She liked English classes. She was receptive and confident with the teachers.

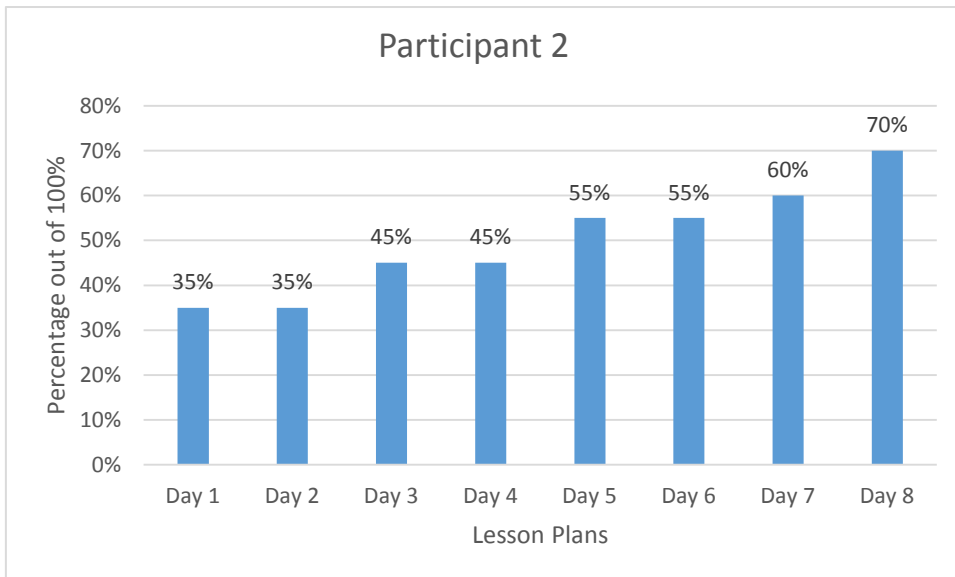


Figure 6. Performance in percentage during the eight English classes



PARTICIPANT 3: Age 4 years old

The participant was hyperactive. He could not concentrate in class. Most of the time he was doing other activities like walking around the class and bothering his classmates. He liked coloring his graphic organizer. He did not follow instructions. He just repeated words when the teachers encourage him to do so. He needed a lot of attention from the teachers. However, he liked English classes.

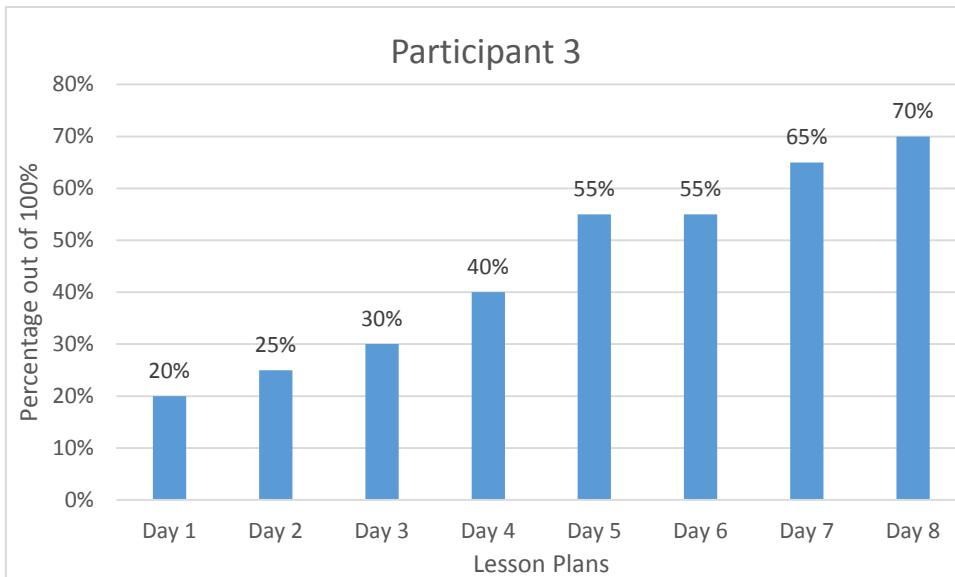


Figure 7. Performance in percentage during the eight English classes



PARTICIPANT 4. Age 3 years old

This participant was shy. She had a short span of concentration. She needed to be helped by the teachers to complete some tasks. She liked playing games, singing songs, and watching videos. She gained confidence through time. She worked with graphic organizers when the teacher encouraged her to do so.

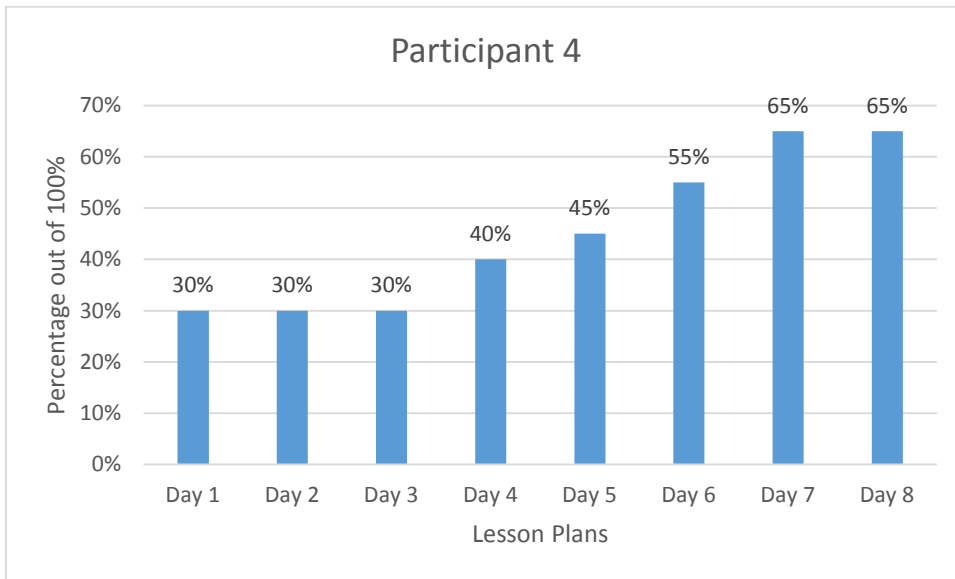


Figure 8. Performance in percentage during the eight English classes



PARTICIPANT 5: Age 3 years old

The participant was shy at the beginning of the study, but he started to gain confidence through time. He started to be participative and liked to be active in class. He was very collaborative and liked to work. He understood graphic organizers with the help of the teachers. He had a long span of concentration and that is why he improved. He was one of the 3-year olds that improved most.

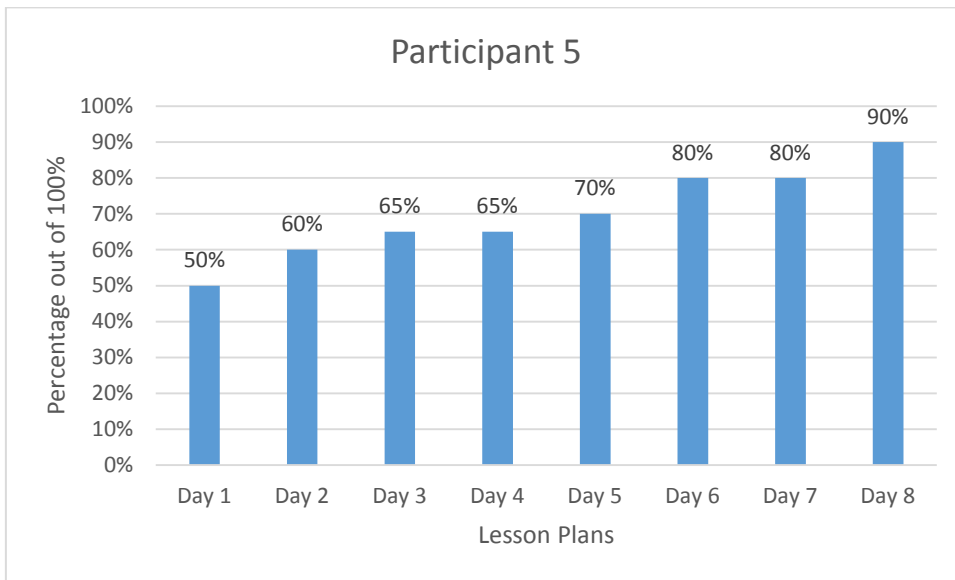


Figure 9. Performance in percentage during the eight English classes



PARTICIPANT 6: Age 4 years old

The participant had a short span of concentration. She followed the graphic organizers and understood it with the help of the teachers. She had some difficulties in completing the tasks. She liked playing games, singing songs. She completed the tasks with the help of the teachers. She liked her English classes.

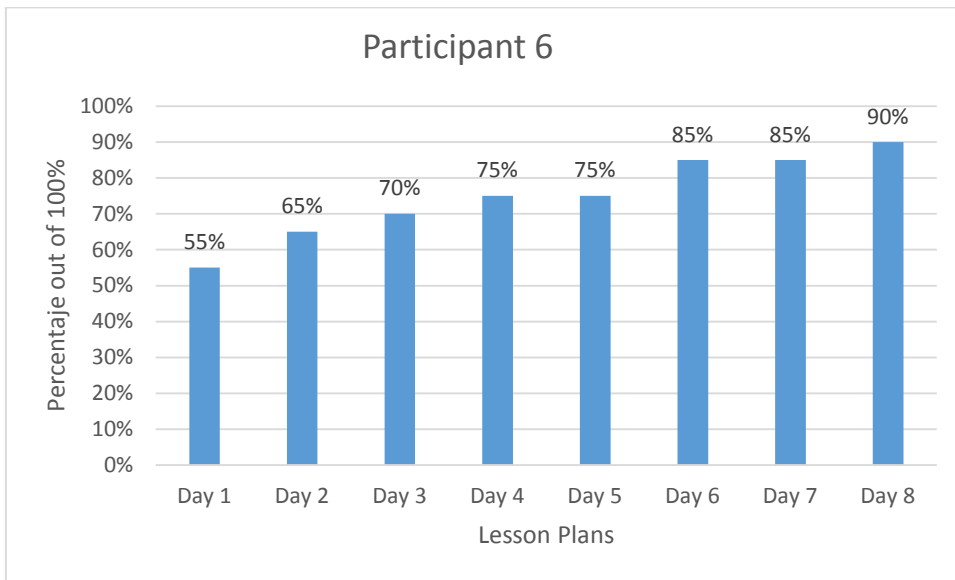


Figure 10. Performance in percentage during the eight English classes



PARTICIPANT 7: Age 5 years old

The participant was very active. He had a long span of concentration. He liked to participate in class. He understood instructions and he was able to use the graphic organizers on his own. He liked English classes. He liked singing songs and watching videos in English. His English vocabulary improved a lot during the treatment. He could complete most of the activities without the help of the teachers. He was able to work both in groups and individually.

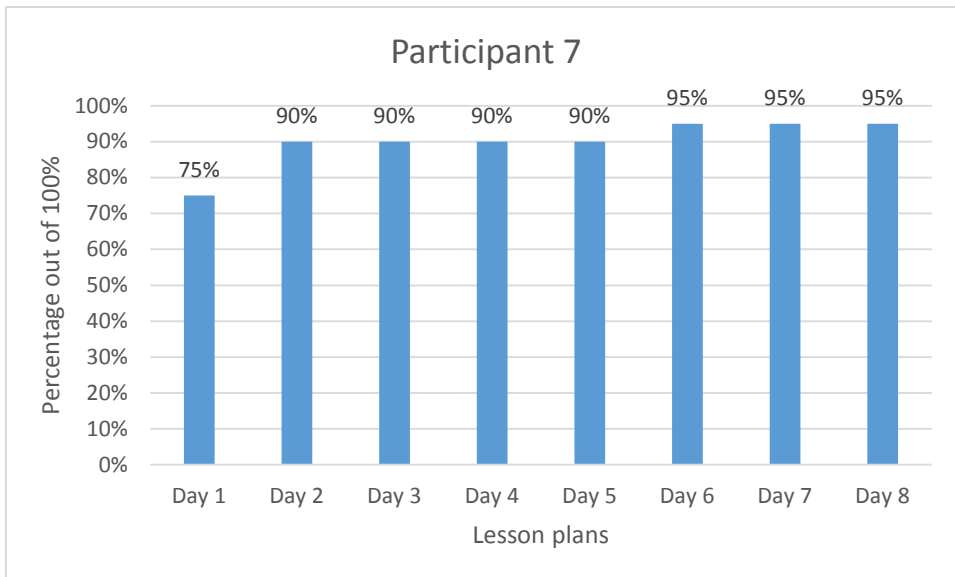


Figure 11. Performance in percentage during the eight English classes



PARTICIPANT 8: Age 5 years old

The participant was very active and self-centered. He liked to play games and answer questions first. He was very competitive with his classmates. He understood and followed the graphic organizers without any problem. He improved his English level a lot. He could complete tasks without the help of the teachers. He could not work in groups, he preferred to work alone.

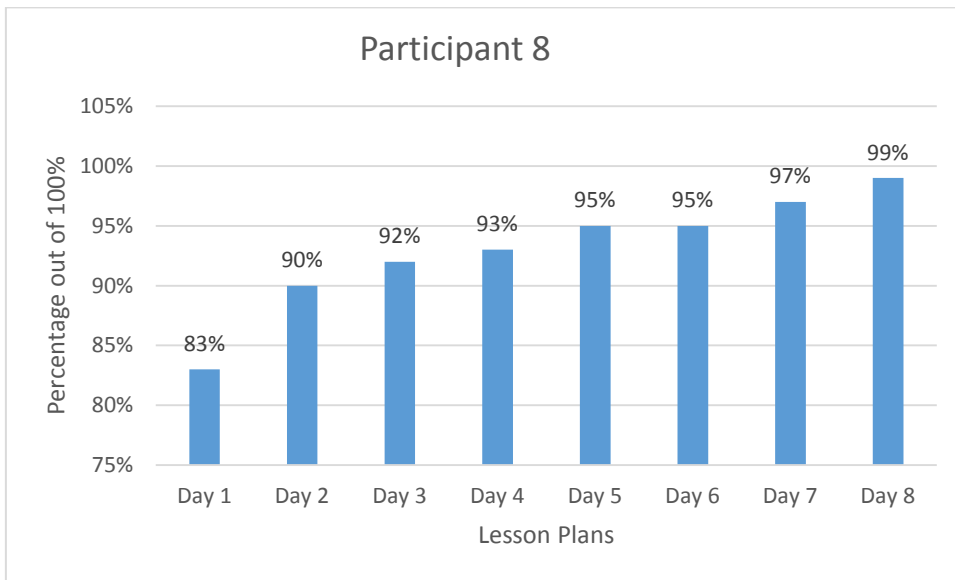


Figure 12. Performance in percentage during the eight English classes



PARTICIPANT 9: Age 4 years old

The participant was still and quiet. He was collaborative. He completed the tasks with the help of the teachers. He followed the graphic organizers when the teachers encourage him to do so. He had a long span of concentration. His English vocabulary improved a lot during the treatment. He liked singing songs and watching videos.

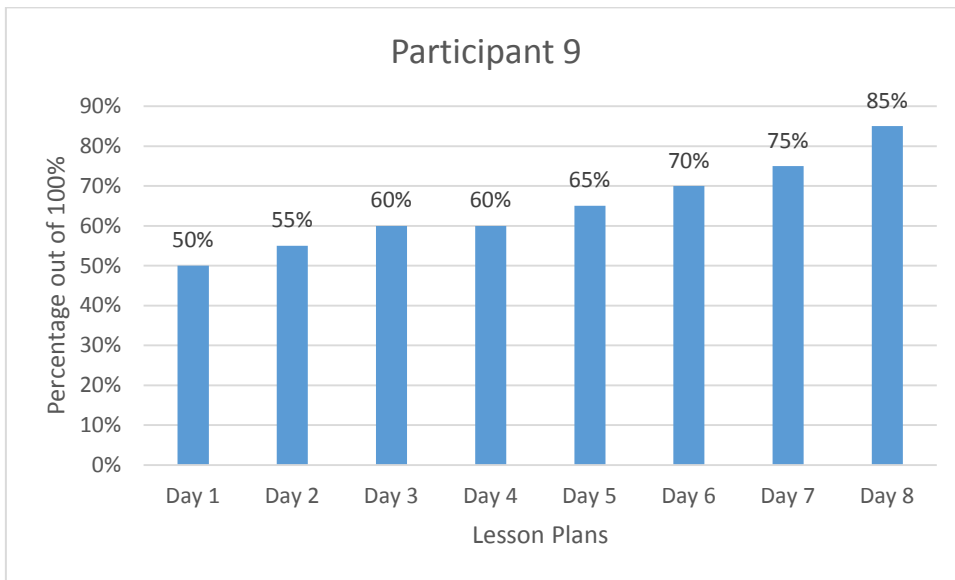


Figure 13. Performance in percentage during the eight English classes



PARTICIPANT 10: Age 5 years old

The participant was very active and collaborative. He liked to participate in class. He completed tasks without the help of the teachers. He understood and followed graphic organizers without problems. He had a long span of concentration. He liked singing, playing games, and watching videos. He liked repeating and using new words in English. He could work in groups and individually as well. He improved his English vocabulary a lot during the treatment.

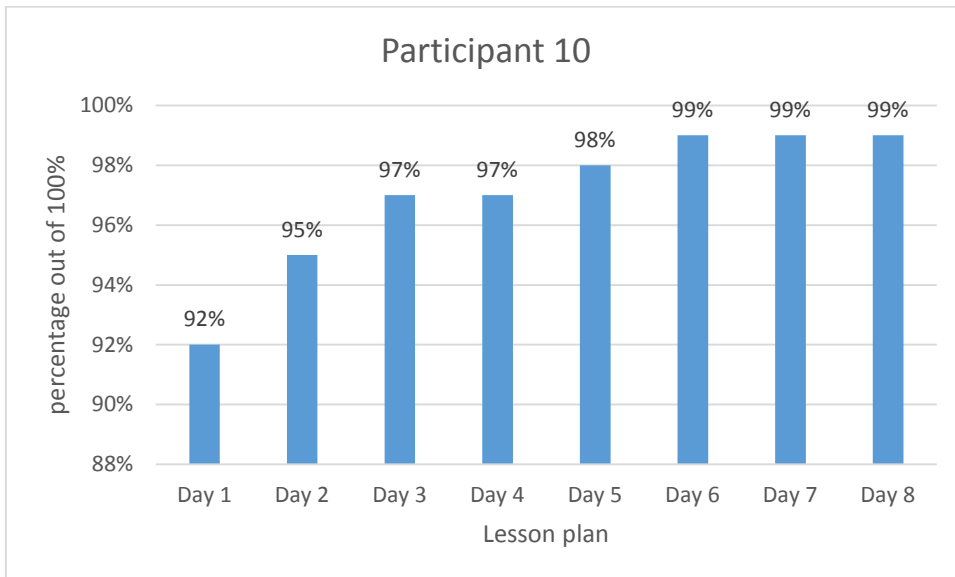


Figure 14. Performance in percentage during the eight English classes



PARTICIPANT 11: Age 4 years old

The participant was very active and collaborative. He liked using the graphic organizers while singing. He understood and followed graphic organizers with some help from the teachers. He had a short span of concentration. However, he enjoyed English classes a lot. He was talkative and participative. He improved his English vocabulary considerably.

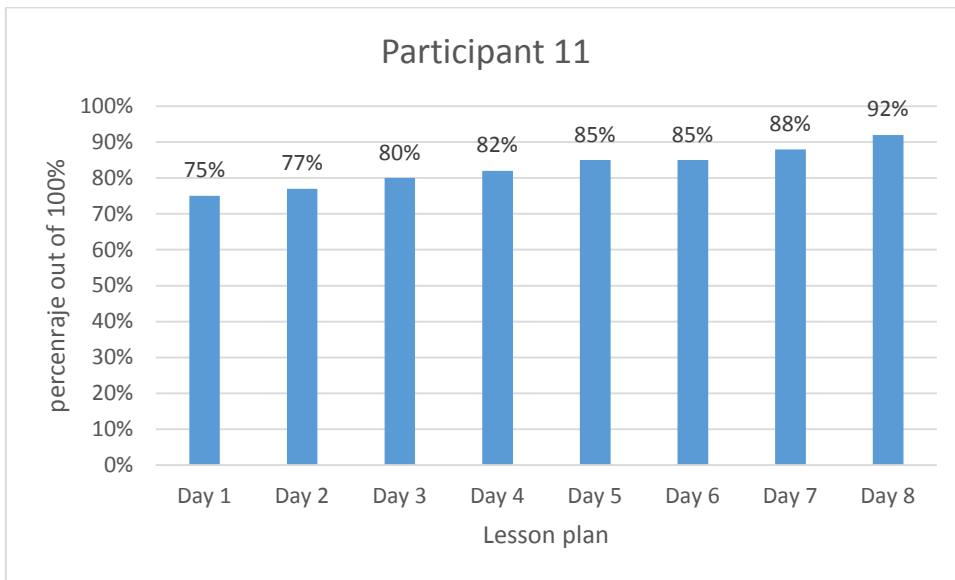


Figure 14. Performance in percentage during the eight English classes



PARTICIPANT 12: Age 4 years old

This participant did not come to the first three classes. However, she understood and followed the graphic organizers with some help. She had a long span of concentration. We do not know exactly how much she improved in learning English vocabulary because she did not take the pre-test. However, at the end of the treatment her knowledge of vocabulary was good.

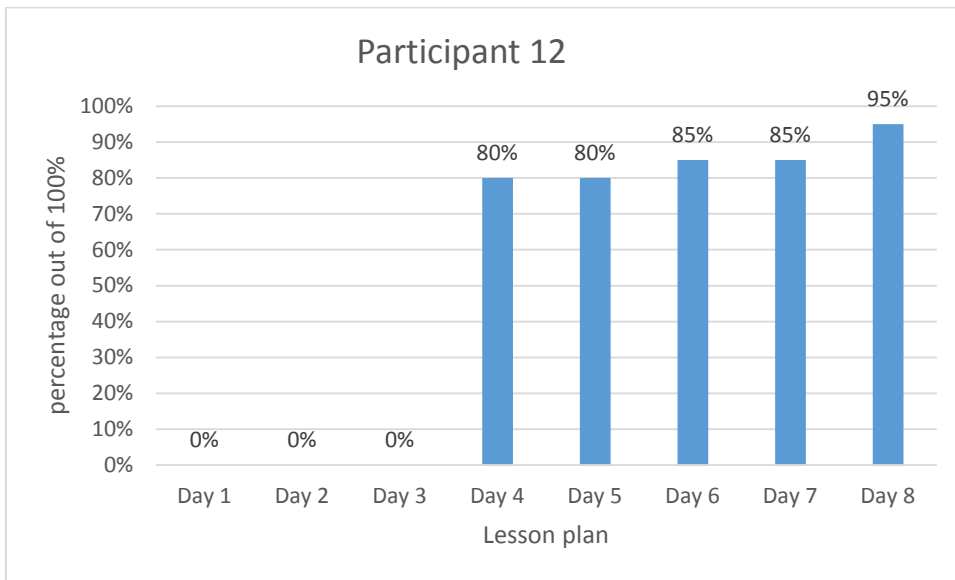


Figure 16. Performance in percentage during the eight English classes



PARTICIPANT 13: Age 3 years old

The participant was quiet. She had a short span of concentration. She completed tasks with the help of the teachers. She liked singing and watching videos. She was not participative in class. She improved her vocabulary a little. She liked English classes. She followed graphic organizers when the teachers asked her to do so. She needed a lot of help.

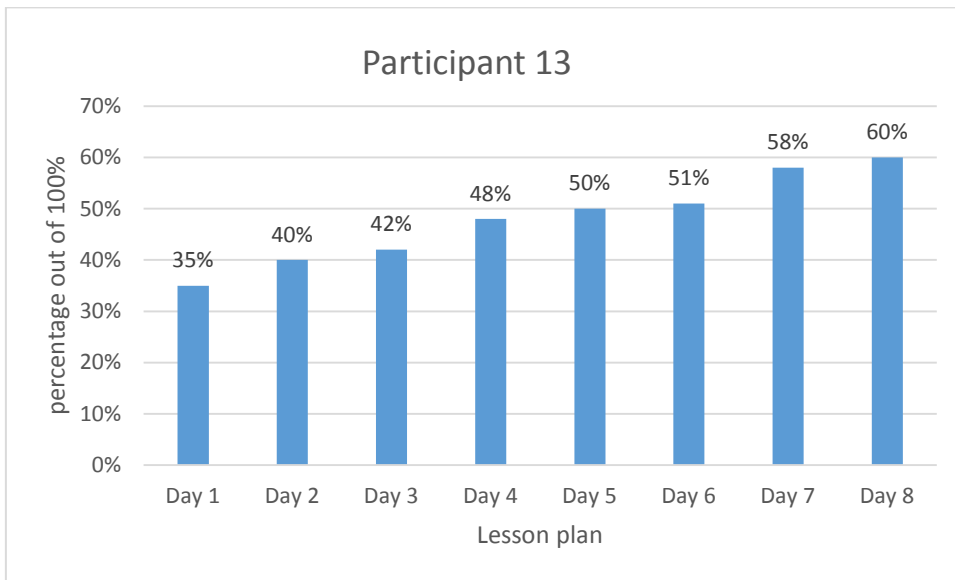


Figure 17. Performance in percentage during the eight English classes



PARTICIPANT 14: Age 5 years old

The participant was very active and collaborative. She understood and followed the graphic organizers without the help of the teachers. She had a long span of concentration. She liked to participate and practice the new vocabulary. She liked watching videos and singing songs. She completed tasks without any problem. She improved her English vocabulary a lot.

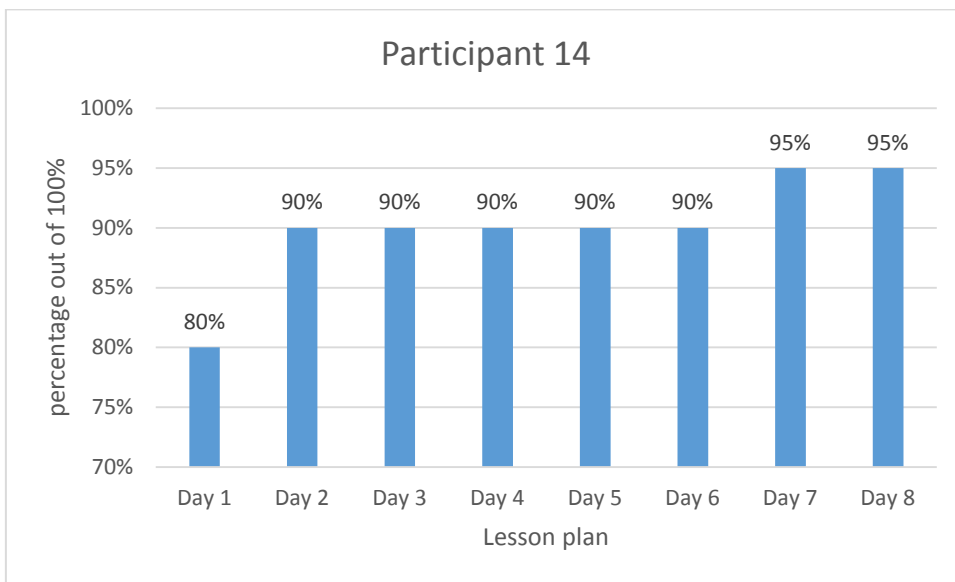


Figure 17. Performance in percentage during the eight English classes



CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

We consider our study of high importance. It is not just because we found an interesting way to improve vocabulary in EFL classrooms. It is because we found a successful mixture of a theory and a tool to improve the learning of English vocabulary by kindergarten students. They were kids who were not able to read in their native language yet. It is very important to mention that we were looking for an improvement in English learning in our schools and high schools. That is why children need to start learning English from the very beginning.

It was possible to identify the positive aspects and some negative aspects of graphic organizers supported by Brain-Based Learning Theory, and to determine if this methodology would help young children improve their vocabulary in English.

This study provides evidence that graphic organizers supported by Brain-Based Learning Theory indeed help children improve their vocabulary acquisition in an EFL classroom. We found that graphic organizers are useful and interesting didactic tools that appeal to children. Moreover, they can be used during the whole class along with other activities such as: songs, stories, rhymes, mother goose, tongue twister, chants, etc. These tools are effective in the case of children because they help them to organize and retain new information better.

We realized that graphic organizers give variety to the class because they can be adapted to different topics and they can be designed according to each lesson plan. Additionally, they contain a lot of visual material that help children connect the new English words with their meaning helping children to



remember them more easily. Besides, graphic organizers help children to store the new vocabulary in the long term memory and to retrieve the information when they look at the graphic organizer.

We found that it is necessary to know the twelve principles of Brain-Based Learning Theory in order to create a friendly environment in the classroom. It is important to point out that children have to perform, imitate, and role play some activities which, according to the Brain-Based Learning Theory, are effective in order to enhance knowledge in the long-term memory.

There were some limitations while carrying out this research. First, the children's age was a significant factor that influenced their performance. Second, the time for each lesson was not enough. Besides, the class was performed after they had had lunch and taken a break, therefore, they were tired and willing to go home. Finally, the time spent in the whole study was relatively short, since it was only two months.

We consider that this methodology needs to be further researched. It could be administered to children that are 4 or 5 years old because, apparently, they are the ones that would respond to the methodology the best.



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Appendix 1. Lesson Plans

Day 1.

Lesson Name: Hello teacher!

Class/Level:

Age: 3-5 years old

Topic: Let me greet my teacher

Skill level: Beginners

Class name: Kindergarten

Day/Date: October 29, 2014

Materials: Story, graphic organizer, pictures, costumes, whiteboard, markers, crayons, pencils, erasers, sheet of paper.

Goal/Aim: At the end of the class, children will be able to greet the teacher.

Function: Greeting someone formally

Example: A: Good morning teacher

B: Good morning students

A: How are you?

B: Fine thank you teacher.

A: Hello Maria How are you?

C: Doing fine teacher. Thank you.

Grammar Structures Employed:

Verb to be

Questions and Answers: How do you greet your parents and your teacher in the morning, in the afternoon and at night?

Warm-up: Playing the wolf

Presentation: Prediction: children look at a graphic organizer and predict the story telling the teacher what the story is going to be about.
Listening to the story "Greetings"

Practice:

Using a puppet the teacher greets students. Students have to respond to the greetings.

After that, students colored the story.

Production: Children act the story out with the help of the graphic organizer. The teacher gives a role for each student and explains what they have to do; finally, she gives the costumes for performing the role play.

Conclusion: "Any Questions?"

Homework: greet their parents at home in English



Day 2.

Lesson Name: Farm animals

Class/Level :

Age: 3-5 years old

Topic: Let's take a walk around the farm!

Skill level: Beginners

Class name: Kindergarten

Day/Date: October 30, 2014

Materials: Song, graphic organizer, animals' pictures, bingo charts, whiteboard, markers, crayons, pencils, erasers, sheet of paper, costumes to represent animals.

Goal/Aim: At the end of the class, children will be able to identify animals' names and sounds.

Function: Identifying animals' names and sounds.

Example: A: What do you see?

B: I see a cow

A: What do you hear?

B: muuuuu!!!!

Grammar Structures Employed:

Simple present

Vocabulary: *farm animals (dog, cow, duck, horse, sheep, pig).*

Questions and Answers: What's your favorite animal? What sound does the dog do? So on with the farm animals...

Warm-up: Cat and mouse

Presentation:

Introduce the vocabulary using pictures and a graphic organizer to ask animals' names.

For example:

What's the name of this animal?

It is a dog.

The teacher asks the children. Do you like singing? Let's sing

Listening to a song "Fun Farm Animals Song"

Sing the song. While children sing, they have to imitate animal's movements and sounds.

Practice: Play Bingo animals. Using a chart children have to match the animals' sound with the correct animal picture.

Animal drawing: Children have to listen to the sound of an animal and draw the animal.



Production: Role play. Using the graphic organizer and customs children represent their favorite animals, children have to introduce themselves and their favorite animals.

A: *What you can see in the farm?*

B: *I see a dog*

A: *what do you hear?*

B: *huff huff ...!!! I am a dog.*

Conclusion: “Any Questions?” Do you like the class? Do you want to sing the song again?

Homework: Practicing animals sounds.

Day 3.

Lesson Name: Five little ducks

Class/Level :

Age: 3-5 years old

Topic: Let's count

Skill level: Beginners

Class name: Kindergarten

Day/Date: November 5, 2014

Materials: Rhyme, Graphic organizer, pictures, whiteboard, markers, crayons, pencils, erasers, sheet of paper, costumes to represent animals.

Goal/Aim: At the end of the class, children will be able to count animals.

Function: Counting from one to five.

Example: *There is one duck*

There are two ducks

Grammar Structures Employed:

There is/ there are

Questions and Answers: How old are you? How many fingers do you have in your hand? How many teachers do you have? Do you like ducks? How do they look like? How many ducks you can see in the picture? How do ducks do?

Warm-up: Sit down and stand up game

Presentation: Pre-listening: Show children a graphic organizer with the numbers.

Listening: Nursery Rhyme: “Five little ducks”

Post-listening: Play a game “gathering together”. Children must get together according to the number they hear.

Practice: *Number code game:* cut out some squares and write numbers from 1-5 on them. Put the numbers in a box and then instruct the students to place the numbers in a line as the teacher calls them out.



Using a graphic organizer, children have to count certain amount of animals according to the number they see on it and stick them in the right place of the graphic organizer. Children are organizing their ideas while they practice to count in English. Children have to work in groups.

Production: Children describe the graphic organizer using there is and there are.

For example:

A: *How many ducks are there?*

B: *There are 2 horses*

Conclusion: “Any Questions?” Can you count your fingers in English?

Homework: Worksheet numbers.

Day 4.

Lesson Name: Red lorry, Yellow lorry

Class/Level :

Age: 3-5 years old

Topic: Let’s say the colors in English

Skill level: Beginners

Class name: Kindergarten

Day/Date: November 6, 2014

Materials: Tongue twister, graphic organizer, puppets, watercolors, pictures, whiteboard, markers, crayons, pencils, erasers, sheet of paper.

Goal/Aim: At the end of the class, children will be able to differentiate colors.

Function: Differentiating colors

Example: A: What color is it?

B: It is.....

Grammar Structures Employed:

It is

Example: *It is red*

Questions and Answers: What is your favorite color? Do you like painting?

Warm-up: Air drawing

Presentation: Teacher uses a puppet to introduce the tongue twister, and the graphic organizer to ask colors.

Red lorry, yellow lorry.

Practice: Using a cupboard, children have to put their colored hands where it belongs according to the right color.



Production: Asking and answering questions using pictures.
What color is it? It is....

Conclusion: Asking children the colors of the classroom objects.
Homework: Colors worksheet

Day 5.

Lesson Name: Today is Sunday!

Class/Level:

Age: 3-5 years old

Topic: Let's say the days of the week

Skill level: Beginners

Class name: Kindergarten

Day/Date: November 12, 2014

Materials: Chant, graphic organizer, hoops, calendar, whiteboard, markers, crayons, pencils, erasers, sheet of paper.

Goal/Aim: At the end of the class, children will be able to identify the days of the week.

Function: Identifying the days of the week

Example: A: *What day is it today?*

B: Today is

Grammar Structures Employed:

It is

Questions and Answers: How many days does the week have? Which are they? What do you do in the week? What do you on weekend?

Warm-up: Hoops: Spread a different color hoops around the floor space when the teacher shouts a hoop, children must run into a hoop. Meanwhile, teacher closes his eyes and shouts a color; children who are in that hoop lose.

Presentation: Using a graphic organizer as a calendar, children repeat the days of the week to model pronunciation.
Use a mascot to introduce the chant.

Practice:

Using a graphic organizer children guide themselves to fill a calendar. After that, children have to draw an activity they do in each day.

Production: Children ask each other the days of the week and each time they hear a week day they perform activities that they do in each day, but when they answer with a weekend day they must do activities they do on weekend.

Role-play.



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A: Hello!

B: Hi!

A: What day is it today?

B: Today is.....

Conclusion: What days do you go to school? Which is your favorite day of the week?

Day 6.

Lesson Name: My body

Class/Level :

Age: 3-5 years old

Topic: Let's say the parts of the body

Skill level: Beginners

Class name: Kindergarten

Day/Date: November 13, 2014

Materials: Video, graphic organizer, flashcards, body puzzle, plasticine whiteboard, markers, crayons, pencils, erasers, sheet of paper.

Goal/Aim: At the end of the class, children will be able to identify the parts of the body.

Function: Identifying the parts of the body

Example: A: What is this/that?

B: This/ That is my head

Grammar Structures Employed:

This/ that

Questions and Answers: Which are your body parts? How are they called? Can you touch them, please?

Warm-up: Up, Down, Stop, and Go. Using flashcards, children must listen carefully to the teacher directions and follow them.

Presentation: Pre listening: using realia and a graphic organizer the teacher asks the students to touch and point the body parts.

Listening: children listen to, watch, and mimic the song's movements.

Practice: Playing a solving puzzle of the body parts.

Using a graphic organizer, children have to stick each body part in the silhouette of the body.

Production: Children work in groups using plasticine and make a body. After that, they have to describe it. Example: *This is my head –That is your head.*



Conclusion: Children touch their body parts according to the teacher's commands.

Homework: Children draw their body.

Day 7.

Lesson Name: My family

Class/Level :

Age: 3-5 years old

Topic: Let's see at my family

Skill level: Beginners

Class name: Kindergarten

Day/Date: November 26, 2014

Materials: Mother goose, graphic organizer, video, whiteboard, markers, crayons, pencils, erasers, sheet of paper.

Goal/Aim: At the end of the class, children will be able to recognize the family members in English.

Function: Recognizing the family members

Example: A: Who is he?

B: He is my father

Grammar Structures Employed:

He is / she is

Questions and Answers: How many are there in your family? Do you have brothers and sisters?

Warm-up: Sharks and Fish. Children imitate commands.

Presentation: Teacher asks questions about children's family.

Presentation of vocabulary through a Graphic Organizer (árbol genealógico).

Presentation of the Mother Goose through a video

Practice: Using a graphic organizer, children will cut the family members and stick where it belongs.

Production: Children will make a picture frame using different materials.

Conclusion: What your mother's name? What's your father's name?

Day 8.

Lesson Name: Christmas is coming to town!



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Class/Level :

Age: 3-5 years old

Topic: Christmas

Skill level: Beginners

Class name: Kindergarten

Day/Date: November 27, 2014

Materials: Song, graphic organizer, a Christmas tree drawing, flashcards, whiteboard, markers, crayons, pencils, erasers, sheet of paper.

Goal/Aim: At the end of the class, children will be able to recognize and identify Christmas words and sing a Christmas Carol.

Function: Recognizing and Identifying Christmas words.

Example: A: *How is it?*

B: *It is big / small*

Grammar Structures Employed:

It is

Questions and Answers: Do you like Christmas? When is Christmas? What do you like most in Christmas?

Warm-up: Tracing a Christmas tree and painting it.

Presentation: Using pictures and a graphic organizer introduce the vocabulary. Presentation of the song "Santa Claus is coming to town."

Practice: Missing Flashcards: teacher spreads the flashcards on the floor and asks the children to close their eyes, and then the teacher takes a flashcard and hides it. Finally, children open their eyes and find out which card is missing.

Production: Children the graphic organizer to describe Christmas things using colors and the adjectives (big/small).

Conclusion: How is Saint Claus? What are the things you like doing in Christmas?

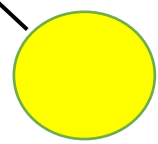
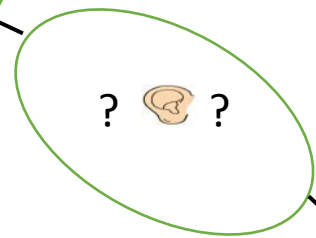
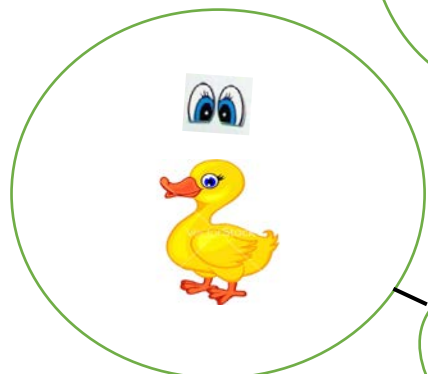
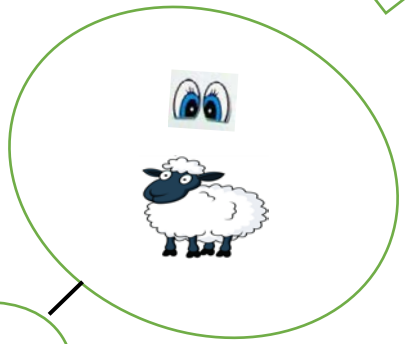
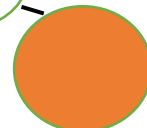
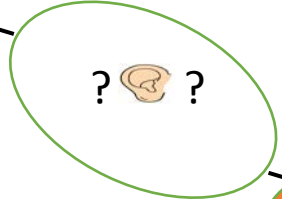
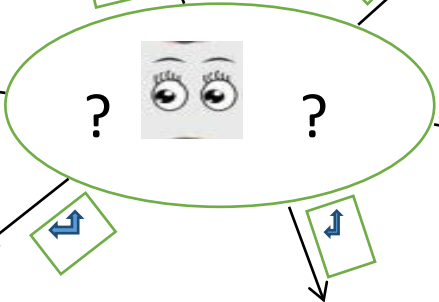
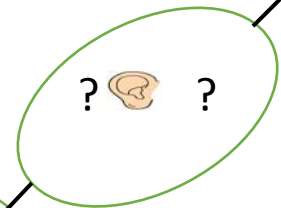
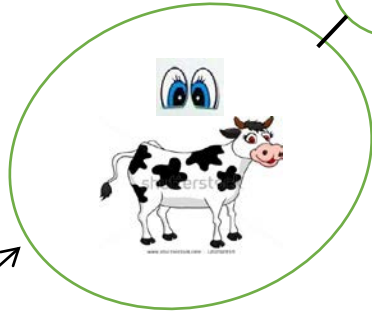
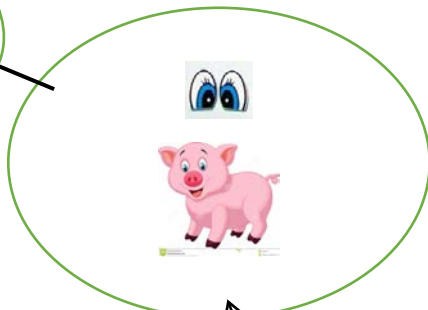
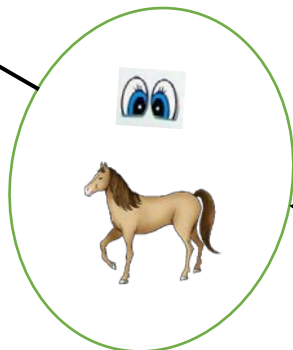
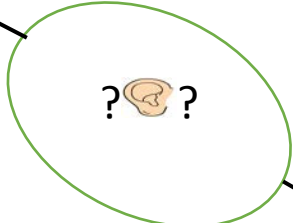
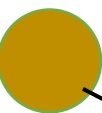
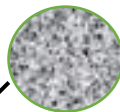


Appendix 2. Graphic Organizers

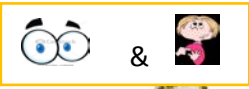




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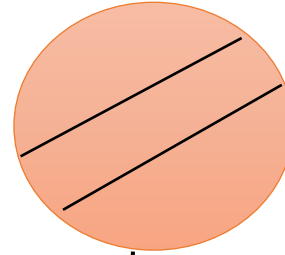
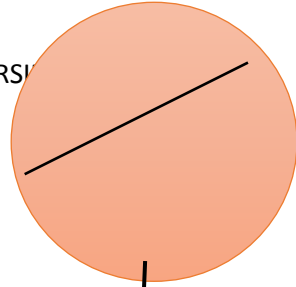
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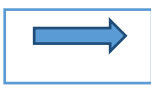






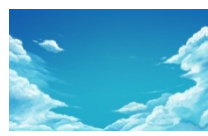




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


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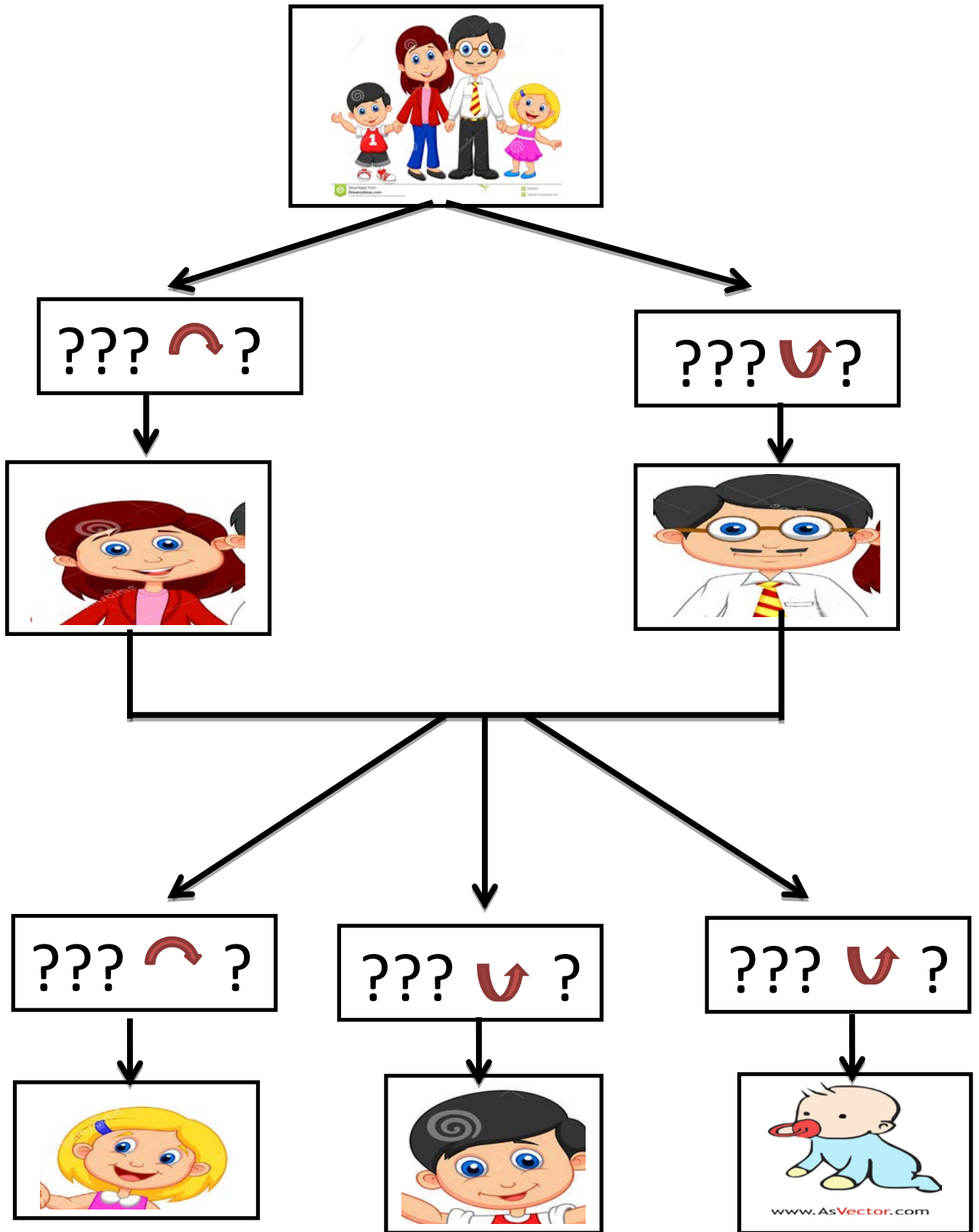


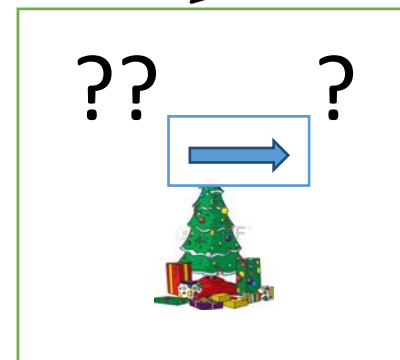
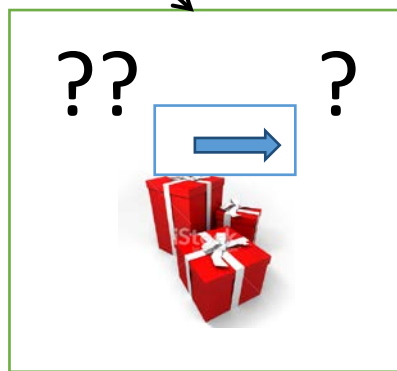
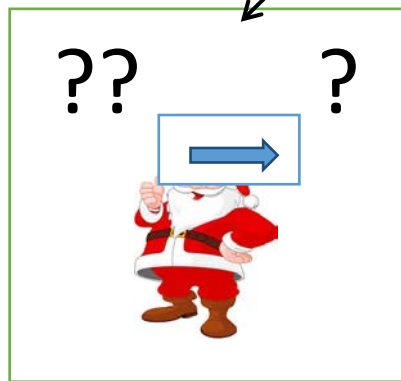
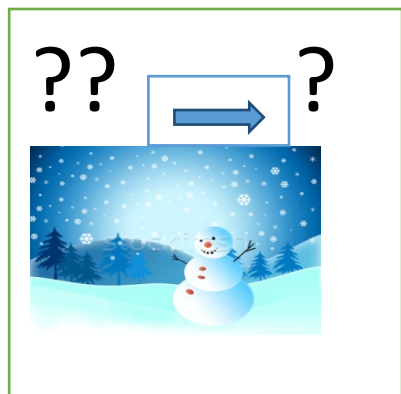
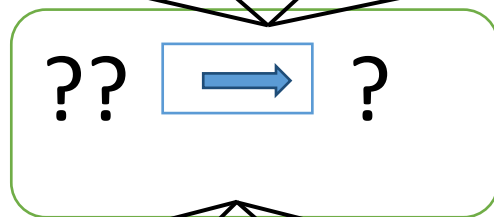
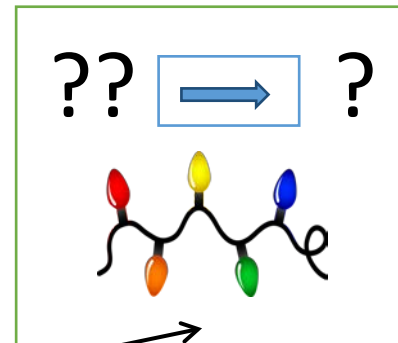
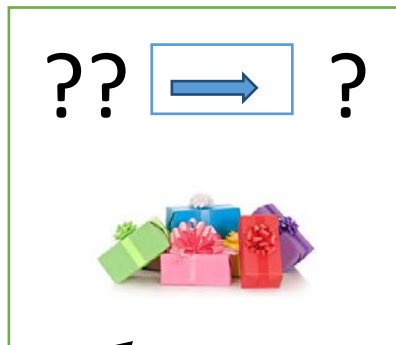
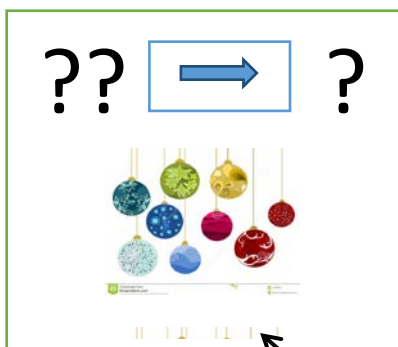
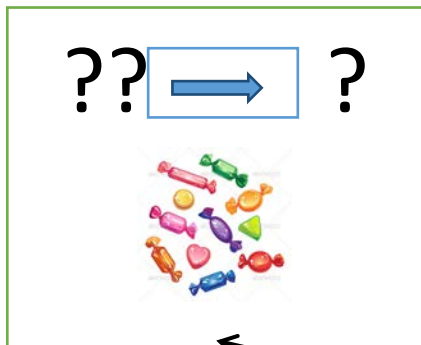
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Appendix 3. “Rayitos de Luz” Elementary School Kindergarten Students









Jessica Ochoa
Patricia Chacha

