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**THE EFFECTIVENESS OF “LEARNING BY DOING” AS A STRATEGY THAT
USES THE ELABORATION OF DIDACTIC MATERIAL DONE BY THE
LEARNERS: A QUASI – EXPERIMENTAL RESEARCH.**

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Abstract

Nowadays, the instruction of vocabulary on the acquisition and learning of English as a second language is important and it has been recognized as a relevant aspect by academics and theoreticians of the area.

The aim of this study is to prove, through a concrete and an experimental form, the effectiveness of the constructivist strategy that uses the elaboration of didactic material as an improvement manner for the acquisition and learning of explicit vocabulary that, at the same time, may be meaningful to the pupils.

The “Learning by Doing” strategy has been built under the perspective of the theory of constructivism, which has been adapted to be applied on two different educational establishments; both subsidized. The first school is located in El Belloto and the second school institution located in Villa Alemana. Accordingly, the thesis study was carried out on 5 different courses with a final average of 132 students.

This inquiry has a quantitative nature with a quasi – experimental design that has as a sample a paired – dependent kind, which took into account the control subunits and the experimental subunits from each EFL (English as a Foreign Language) classroom where the strategy previously mentioned was conducted.

As described on the previous paragraph, the results were analyzed using a mathematical – statistical type of measurement denominated “T – Test” table. These demonstrated that the constructivist strategy namely “Learning by Doing” improve the learning of explicit vocabulary on those grades belonging to the primary education.

However, the course pertaining to secondary education did not show any sign of improvement when the constructivist strategy that uses the elaboration of didactic material came to an end.

KEY WORDS: Constructivism, Learning Strategy, Quantitative Investigation, Quasi – Experimental Design, Vocabulary Acquisition and Learning.

Resumen

En la actualidad, la instrucción del vocabulario es importante para la adquisición y aprendizaje del inglés como segunda lengua. Esto ha sido reconocido como un aspecto relevante por académicos y teóricos del área.

El objetivo de esta investigación es probar a través de una forma concreta y experimental la efectividad de una estrategia que usa la elaboración de material didáctico como manera de mejorar la adquisición y el aprendizaje del vocabulario explícito, y que éste a su vez sea significativo para el alumno.

La estrategia “Learning by Doing” ha sido construida bajo la perspectiva de la teoría del constructivismo, la cual ha sido adaptada para ser aplicada en dos establecimientos educacionales diferentes, ambos subvencionados. El primero situado en El Belloto y el segundo ubicado en Villa Alemana. Por consiguiente, esta investigación se realizó en 5 cursos diferentes con un promedio final de 132 alumnos.

Esta investigación tiene una naturaleza cuantitativa con un diseño cuasi – experimental y tiene como muestra un tipo dependiente y pareado, la cual tomó en consideración las subunidades controles y las subunidades experimentales de cada clase “EFL” en donde la estrategia previamente mencionada fue llevada a cabo.

Según lo descrito en el párrafo anterior, los resultados fueron analizados usando un tipo de medición matemático – estadística denominada tabla “T – Test”. Éstos demostraron que la estrategia constructivista nombrada “Learning by Doing” mejoró el aprendizaje de vocabulario explícito en aquellos cursos pertenecientes a la

educación general básica. Sin embargo, el curso perteneciente a la enseñanza media no mostró ninguna señal de mejoramiento cuando la estrategia que usa la elaboración de material didáctico llegó a su fin.

PALABRAS CLAVES: Constructivismo, Estrategia de Aprendizaje, Investigación Cuantitativa, Diseño Cuasi – Experimental, Adquisición y Aprendizaje de Vocabulario.

CHAPTER 1
INTRODUCTION

Introduction

Grammar and vocabulary are the basis of any language. Without grammar or vocabulary, people are not able to communicate between each other. Both elements are necessary when people exchange information. They also serve the objective of expressing feelings, ideas, and opinions.

Nowadays, English instruction is not as focused on grammar as it used to be. Its purpose is to provide learners with the basic structures of the English language so as to allow communication, assuming that exposition and training will help pupils gain the necessary structures and refine the existing structures as to increase their language range. But without the correct words; the message may not be delivered in a clear style. Thus, the role of vocabulary is of a highest value in order to communicate effectively since it helps people to express as they want to. Putting it in other words, grammar structures and vocabulary do not share the same importance. But, they are significant in order to reach an interactive communication between two or more people and, as a consequence, they demand to be together when a message is given.

The Ministry of Education of Chile (2013) has explained the role of vocabulary as the tool that can open the student's mind to the world around them. According to it, "(...) *increasing learner's scope of vocabulary teaches them what the world is about* (...)" (Ministry of Education of Chile, 2013, Retrieved from: www.curriculumenlinea.cl/605/articles-20771_recurso_pdf.pdf).

Without doubt, vocabulary knowledge is what the learning process requires to allow learners to connect themselves with their environment and understand it and, as a matter of fact, it is needed to express accurately how people feel, how people think, and what their opinions are. Accordingly, teachers need to give their pupils' the tools they may need to cope with the language they are learning.

The main aim of this research is to make the students the active doers of their own process of learning, specifically in regard with vocabulary acquisition. The researchers believe that through constructivist strategies, the learners will be encouraged to be the active participants of their language learning process on the issue of vocabulary inside the classroom and outside as well, while teachers act as guides.

Based on what has been previously asserted by the researchers, they are certain that through the elaboration of didactic material, pupils may learn vocabulary in a meaningful way.

The Chilean English Teacher, Master in Applied Linguistics, and in English Language Teaching from the University of Sheffield in the United Kingdom, Pía Tabali declares to EducarChile in an interview developed on 2013 that *"(...) one example to apply with English students is to motive them through dynamic classes in the way they cannot get bored, so they will be paying attention to the class for a longer period of time (...)"* (Tabali, 2013, Retrieved from: www.educarchile.cl/ech/pro/app/detalle?id=224342). Hence, the researchers presume that the elaboration of didactic material with the objective of learning vocabulary will stimulate students to be more active and participant during class.

The purpose of this study is to demonstrate the effectiveness of the learning strategy of elaborating didactic material in the classroom by a 6th., 7th., and 8th. primary grades and by learners of a 2nd. senior year from two different subsidized educational establishments will improve their learning of vocabulary in El Belloto and Villa Alemana. Therefore, this thesis study is committed to prove or reject the effectiveness of the “Learning by Doing” strategy, focusing on the development of vocabulary strategies to enhance language skills and helping pupils to widen their range of vocabulary that may facilitate their process of learning of the English language. In order to prove its efficacy, the researchers will compare and contrast the marks before and after the implementation of the strategy previously pointed out.

1.1 Area of Research

The area of research of this thesis study concerns the cognitive psychological field when implementing the constructivist strategy denominated “Learning by Doing” to different EFL classes in different schools for the reason that the researchers anticipate the influence of cognitive psychology on this inquiry since it should provide the theoretical support for this investigation on the studies and theories in regard with the cognitive development, at different ages and stages, every student should face.

It also encompasses the educational area, where the learning and teaching methodological field arises due to the fact that different studies on the matter say that the educational field has a fundamental role on this research as it will help the researchers to be based on previous studies and theories that support the acquisition and learning of explicit vocabulary of students.

1.2 Topic

The topic of this study is the learning of vocabulary in an EFL context through the elaboration of didactic material.

1.3 Problematic Situation

Throughout the researchers' internships, they realized that primary and secondary learners from two subsidized school institutions in El Belloto and Villa Alemana lacked the vocabulary proposed on the 2016 Curricular Bases (Bases Curriculares) and on the 2016 Study Programs (Programas de Estudio).

A quantitative analysis performed by the Chilean Agency of the Education Quality (Agencia Nacional de la Calidad de la Educación) that was carried out in Santiago, on 2013 showed a synthesized summary on the results of the 2012 English SIMCE test adducing that *"(...) only an 18% of the pupils who sat for the test achieved the expected level. A2 level with a 9,6% and B1 level with an 8,2% (...)"* (Agencia de Calidad de la Educación, 2013, Retrieved from: www.agenciaeducacion.cl/wp-content/files_mf/sr_ingles_iiimediao_2012.pdf).

According to the CEFR (Common European Framework of Reference for Languages) posed on the analysis, A2 is the expected level for primary education and B1 is the expected level for secondary education.

Although the 2012 percentages of students who reached the expected levels is lower in comparison to the percentages from 2010, it is important to emphasize that out of the 3 kinds of educational establishments; *"(...) subsidized schools are the ones that increase the most their official certification communicated by the Ministry of Education of Chile (...)"* (Agencia de Calidad de la Educación, 2013, Retrieved from: www.agenciaeducacion.cl/wp-content_mf/sr_ingles_iiimediao_2012.pdf) as it has

been stated by the Chilean Agency of Education Quality on the analysis previously mentioned.

1.4 Background to the Study

Through experiences and observations of the researchers in practicums III and V, they had the inkling that learners lacked the necessary vocabulary to develop the expected language skills for their level, considering the 2016 Curricular Bases and the 2016 Study Programs for the 6th., 7th., and 8th. grades and for the 2nd. senior year asserted by the Ministry of Education of Chile.

Taking into consideration what has been previously declared by the researchers on the area of research concerning the educational field, they based, on the one hand, the thesis study theoretical framework on previous studies and theories that support the acquisition and learning of explicit vocabulary. On the other hand, during their internships, the researchers analyzed what the most important issues regarding vocabulary acquisition were in order to implement the strategy under consideration of the pupils' characteristics and needs.

Additionally, the researchers framed their work on an approach that encouraged students to take control of their learning process in order to tackle the English vocabulary as to make it an effective and valuable learning tool.

Accordingly, and in order to back up this preliminary diagnosis, a survey was applied to the 4th. year learners of English Pedagogy at Universidad Nacional Andrés Bello with the aim of establishing whether they considered that pupils in their practicums lacked the vocabulary proposed by the 2016 Curricular Bases or Study Programs. In addition, this inquiry is also based on the 2015 English SIMCE test results of one of the subsidized educational establishments where this investigation was

conducted. Consequently, the researchers applied the constructivist strategy namely “Learning by Doing” in order to prove whether it was an effective tool for students to acquire vocabulary in context.

1.5 Justification to the Study

It is common knowledge that grammar and vocabulary are the basic components of any language. Without grammar it is not possible to communicate accurately, but without words communication is absolutely restricted to the limitations of non – verbal communication.

Wilkins (1972), Professor Emeritus of Linguistics at the University of Reading in the United Kingdom, is even more categorical when stating that “(...) *without grammar, very little can be conveyed. Without vocabulary, nothing can be conveyed (...)*” (Wilkins, 1972 as cited in Moghadam, Zainal, & Ghaderpour, 2012, p.558). As a consequence of what David Wilkins says, in foreign language learning and teaching, vocabulary instruction plays a paramount role in the development of the productive and receptive English skills and hence, in any attempt to communicate with relative accuracy. Baker (1998) also believe that “(...) *learning a foreign language depends on vocabulary knowledge (...)*” (Baker, 1998 as cited in Moghadam et al., 2012, p.558). Vocabulary is not granted by constant exposure as it is the case of the mother tongue and to a lesser extent of immersion programs of second language learning. Therefore, foreign language teachers should find different forms to overcome the lack of input and provide learners with effective and suitable strategies to increase their acquisition of vocabulary and knowledge of it. This research focuses on the improvement of vocabulary through the constructivist strategy that uses the elaboration of didactic material. Henríquez, Executive Secretary from the Chilean Agency of the Education Quality in an interview developed in Concepción in 2015,

was asked about the reasons regarding poor results of the 2015 English SIMCE Tests and one of the elements he adduces as relevant to prevent reading comprehension on the English SIMCE Test is the “(...) *lack of vocabulary* (...)” (Carlos Henríquez, 2015, Retrieved from: www.biobiochile.cl/noticias/2015/08/13/simce-de-escritura-a-sexto-basicos-revela-poca-variedad-en-vocabulario-y-profundizacion-de-ideas.shtml). Likewise, the connection between reading comprehension and vocabulary is made clear by Chang & Gould (2008) who assert that “(...) *vocabulary acts as a background tool in the reading comprehension. Vocabulary helps to have a better understanding about what is in the text and that is why today’s children fail in developing reading skills* (...)” (Chang & Gould, 2008 as cited in Moghadam et al., 2012, p.559).

The following part will introduce the Research Question that will guide this study and, at the same time, it will provide a route map to this thesis study. In consideration that the paradigm of the inquiry is of a quantitative nature and its design is quasi – experimental, the research question will be significant in determine both hypotheses. Moreover, the general and specific objectives of this investigation will be formulated in order to give an answer to the question.

1.6 Research Question

Will the constructivist strategy that uses the elaboration of didactic material in an EFL environment improve the pupils' learning of vocabulary in primary and secondary levels?

1.7 Hypotheses

1.7.1 Working Hypothesis

The “Learning by Doing” strategy in an EFL context will improve students’ learning of vocabulary in primary and secondary levels from two schools in El Belloto and Villa Alemana.

1.7.2 Null Hypothesis

The strategy in an EFL environment will not improve learners' learning of vocabulary in primary and secondary levels from two school institutions in El Belloto and Villa Alemana.

1.8 Objectives

1.8.1 General Objective

To demonstrate if the constructivist strategy denominated “Learning by Doing” in an EFL context improves pupils’ learning of vocabulary in primary and secondary levels from two educational establishments in El Belloto and Villa Alemana.

1.8.2 Specific Objectives

1. To apply an adaptation of multiple vocabulary tests.
2. To design lesson plans that incorporate the constructivist strategy that uses the elaboration of didactic material as a strategy to acquire vocabulary.
3. To apply the “Learning by Doing” strategy.
4. To evaluate the quantity of vocabulary the students of both school have learnt.
5. To evaluate if the constructivist strategy namely “Learning by Doing” allows the learners of both school institutions to learn more vocabulary than the current strategy they have been exposed to by using a statistical type of measurement denominated “T – Test” table.

1.9 Limitations

1. The educational establishments' requirements to cover specific content.
2. The school agenda.
3. Time constraints in order to apply the constructivist strategy that uses the elaboration of didactic material in a more extensive period of time.

1.10 Delimitations

1. The application of the “Learning by Doing” strategy to the 6th., 7th., and 8th. primary grades and to the 2nd. senior year from two subsidized school institutions in El Belloto and Villa Alemana, 5th. Region of Valparaíso, Chile.
2. The implementation of tests following the educational establishments’ syllabuses in an EFL environment.

CHAPTER 2
THEORETICAL FRAMEWORK

Introduction

This chapter has been divided into six sections and each one of them allows the lecturer to have an enlightenment on the most important studies and theories concerning the Theory of Constructivism, the Student – Centered Learning Approach, the Cognitive Processes from Piaget’s Theory, Piaget’s Four Stages of the Theory of Cognitive Development, Metacognition, and System of Memorization as any attempt to effectively implement new learning and teaching strategies.

2.1 An Insight on the Theory of Constructivism

The concept of “Constructivism” has been defined by several authors such as Albert Bandura, Walter Mischel, Jean Piaget, Ernst Von Glasserfeld, Lev Vygotsky, among others, and, each one of them has approached the conceptualization from a different point of view. Accordingly, this chapter attempts to grasp the fundamental basis of the theory of constructivism in the light of its most relevant proponents.

As an outline the main theorists behind constructivism are, first of all, Jean Piaget who has been recognized as the father of the theory of constructivism and according to Gail & Brader – Araje (2002), Piaget (1967) approaches constructivism from a biological view point allowing the researchers explore how pupils develop their cognitive processes. Equally important, is Vygotsky (1978) who presents a social perspective of the theory of constructivism. Based on their studies, the contemporary philosopher and psychologist Von Glasserfeld (1995) has a radical point of view about it declaring that the only way to learn something is by thinking about it on the first place and then, by creating what it has been thought of. The Professor of Education at the University of New South Wales, Matthews (1998) adopts constructivism and promotes its implementation in education. He has been seen as one of the most significant academics that connected the theory of constructivism to education in the last twenty – five years.

Out of many other theories connected with the educational field, constructivism seems to fulfill the students’ needs better than any other theory linked to the area.

Hence, some definitions will be mentioned to have a complete comprehension on the subject.

Some of the authors have a view point on the theory of constructivism that has served as the support to build their own definitions and perspectives of the theme, Brooks & Brooks (1993) says that “(...) *constructivism is not a theory about teaching. It is a theory about knowledge and learning. (...) the theory defines knowledge as temporary, developmental, socially and culturally mediated, and thus, nonobjective (...)*” (Brooks & Brooks, 1993 as cited in Gail & Brader – Araje, 2002, p.2).

An important factor the reader should have in consideration regarding the definition previously pointed out is that the proponents are making a reference in regard with the relevance of knowledge and learning as terms that are not related to teaching.

Von Glasserfeld (1995) states that “(...) *the human mind can only know what the human mind has made (...)*” (Von Glasserfeld, 1995 as cited in Gail & Brader – Araje, 2002, p.3) and consequently, Piaget (1967) asserts that “(...) *all knowledge is tied to an action, and knowing an object or an event is to use it by assimilating it to an action scheme (...)*” (Piaget, 1967 as cited in Gail & Brader – Araje, 2002, p.3). As it has been declared by Ernest Von Glasserfeld and Jean Piaget, constructivism is connected to the learner as an active individual in charge of her/his process of learning by constructing new knowledge acquired from past experiences, while, the teacher acts as a guide by giving them the tools they may need to solve the problem by themselves in order to keep learning through the possible production they will make at the end. Additionally, the social context plays a relevant role on this theory due to the fact that acts as a guide that leads the pupils to possible production of

new knowledge that has been previously acquired. This means that the learning process works as a whole, and not as the transmission of segregated bits and pieces of content into the students' heads.

This theoretical point of view contrasts with Behaviorism that focusses on the stimulus from the environment and it has as its main theoreticians Ivan Pavlov and B.F. Skinner.

The American Professor of Science Education from the University of Maryland in College Park, Lynn Dierking (1991) presents an updated definition of the theory of Behaviorism that is “(...) *behaviorism theory suggested that learning was extremely regulated by the environment and occurred by building a series of stimulus – response connections (...)*” (Dierking, 1991, p.4). In other words, behaviorism places its significance on the behavior rather than the action.

For example, the learner does not have an active role in the classroom. Instead, he/she should follow a pattern in order to receive information and, as a result of that, the teacher takes the place of the protagonist in the process of learning even when he/she is the one giving the input to the pupils. This has been better known as the Teacher – Centered Approach.

Respecting constructivism and the role of students when building their process of learning, it is necessary to have a better understanding on the topic of student – centered learning approach that will be further explained in part 2.2 for the reason that all concepts are connected when reaching the objective of learning meaningfully. Therefore, and as it was pointed out before, through action and production learners can acquire meaningful knowledge that will remain in time.

2.2 The Student – Centered Learning Approach

In spite of the definition of the Student – Centered Learning Approach being explained by various researchers of the educational field like John Dewey, Jean Piaget, and Lev Vygotsky, whose theories have been a matter of concern to how pupils learn in an effective way; the researchers will have under consideration an updated definition of the approach previously mentioned.

Carl Rogers is renowned for his studies on the area of psychology concerning with the role of students and teachers in an educational context. Nowadays, he is recognized as the father of the student – centered learning approach and its diverse studies about the theory of therapy behind it.

Through the development of nineteen prepositions on Carl Rogers' Client – Centered Theory developed on 1951, he says that “(...) *every individual exists in a continually changing world of experience in which he or she is the center (...)*” (Rogers, 1951 as cited in Corsini, Wedding, & Dumont, 2008, p.151). That is to say that learners possess the ability to create meaningful learning at their own progress.

Acknowledging what Carl Rogers states on his theory, O'Neill & McMahon on 2005 performed an inquiry where they recognize the pupils as the active performers of their learning development under the frame of the student – centered learning approach.

Undoubtedly, the theory of constructivism and the student – centered learning approach are associated to one another since that in both scenarios, when the constructivist strategy namely “Learning by Doing” is been applied and when the constructivist strategy that uses the elaboration of didactic material is not been implemented, the student has the active role in learning instead of the teacher who assumes the passive role of the process. Thus, learners are conscious of the degree of involvement and responsibility their learning process requires as well as teachers who has, as a matter of fact, a secondary role in the process of learning. Accordingly, the main purpose of the student – centered learning approach in this investigation is to highlight the signification pupils have as the significant characters in education.

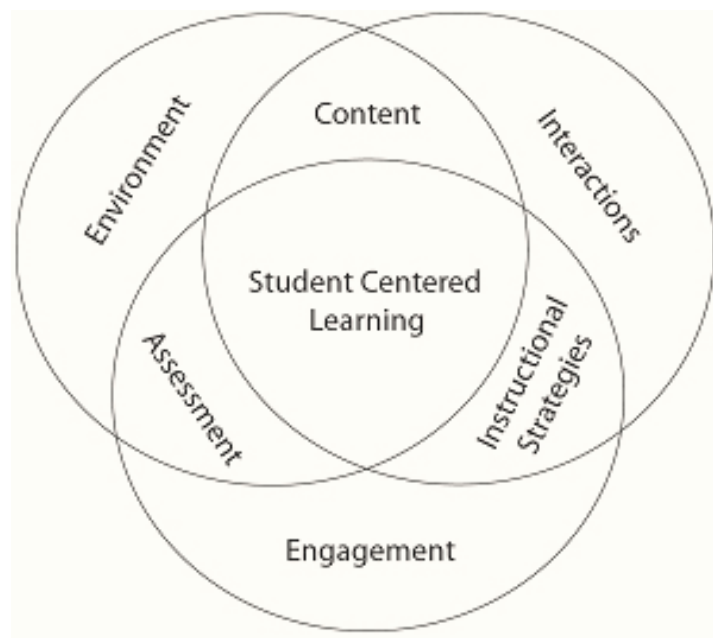


Figure 1 (1986) shows the aspects that are involved in the learning process of students (Figure 1, 1986, Retrieved from: <http://www.csu.edu.au/division/student-learning/home/csu-academics/sessional-staff/know-your-students/what-are-my-learners-learning>).

When learners construct their learning, teachers should take into account the factors presented on Figure 1 in order to hold on the student – centered learning approach due to the fact that they are essential and help pupils when creating their process of learning.

Assessment, content, environment, instructional strategies, and interaction are the external aspects that play an important role in the student – centered learning approach. Although, there is one internal factor denominated engagement that answers to not only the student interest in the topic being studied, but it is closely linked to what the learner is cognitively able to achieve according to her/his developmental stages.

The following section will give an overview on how Jean Piaget has divided and explained these stages but beforehand, there are some concepts related to cognitive processes every pupil should have internalized. They need further clarification in order to comprehend what will be explained on part 2.3 and 2.4.

2.3 Cognitive Processes from Piaget's Theory

The educational field has many theorists that address the importance of education in different areas and through different viewpoints. One of the most relevant academics on this subject is Jean Piaget, who is the catalyst of multiple psychological researches regarding themes like student's development and human intelligence. He is pointed out throughout this study with the aim of underlining his two theories namely Constructivist Theory of Knowing better known as the Theory of Constructivism and the Theory of Cognitive Development where Piaget explains the cognitive processes a learner develops as he/she grows up and the stages he/she faces when growing up.

Both theories have portrayed significant roles on the comprehension of the pupils' mental development for the reason that they have helped to broaden knowledge about how students give account of the world around them and how they can understand it.

Certainly, some important conceptualizations that are key to understand Piaget's theory are Schema, Assimilation and Accommodation, Organization, and Equilibration and he explains them in detail as follows:

- 1. Schema:** Piaget asserts that every human being has a schema that has been created inside the mind of every individual to construct knowledge in an organized manner. According to Piaget, there exist two styles a learner uses her/his schema and they are denominated assimilation and accommodation.
- 2. Assimilation and Accommodation:** The term assimilation refers to the pupil's incorporation of new knowledge into the knowledge he/she already manages towards an operative schema. Subsequently, accommodation implies the restructuring of the new knowledge into the student's schema.
- 3. Organization:** It is the system the brain uses to organize the new content which includes experiences, knowledge, and ideas that are isolated inside the learner's mind and as a consequence of this organization, pupils understand the world around them logically.
- 4. Equilibration:** On the one hand, Piaget explains equilibration as the mechanism by which students move from one operational stage to the next. These stages are explained in detail in section 2.4.

On the other hand, equilibration implies what Piaget calls “Cognitive Conflict” or disequilibrium that refers to experiences that challenge the understanding learners have of the world.

Through this mechanism, pupils make sense of experiences, knowledge, and information that he/she faces every day and about what may represent a cognitive conflict.

Another important contribution that Piaget made to the understanding of how the mind of students' work refers to its development, which is supposed to happen in stages:

2.4 Piaget's Four Stages of the Theory of Cognitive Development

Based on the cognitive processes from Piaget's theory, Santrock (2008) studies and assumes what Piaget explains and divides as the four stages of cognitive development namely the sensorimotor stage, the preoperational stage, the concrete operational stage, and the formal operational stage that will be described for further comprehension.

- 1. The Sensorimotor Stage:** It is proposed by Piaget and it is the first stage of cognitive development. This stage goes from birth until two years of age, approximately. On this stage, the understanding a learner presents of the world is the result of sensory experiences and motor responses to external stimulus.
- 2. The Preoperational Stage:** It is the second stage of cognitive development and it is from two to seven years of age. On this stage, pupils understand the world from an egocentric and intuitive perspective rather than establishing logical relations among people and objects. Within the second stage of cognitive development, Piaget acknowledged two sub stages that are Symbolic Function and Intuitive Thought. On the first one, students are capable of imaging and constructing objects without seeing them; having as

their main objective a picture of the world and its dimensions. Symbolic Thinking can also be appreciated at this stage. However, intuitive thought sub stage is connected to learner's reasoning about what they can know and what they want to know by asking questions of their interest about the world.

3. The Concrete Operational Stage: It is the third stage of cognitive development and it is from seven to fourteen years of age. It is associated with logical aspects of the cognitive development of pupils. Logical reasoning and thinking and the use of concrete operations through concrete actions are expected from students at this stage, but abstract issues cannot be solved yet.

4. The Formal Operational Stage: It is the fourth stage of cognitive development and the most valuable for this thesis study since it is from eleven to fifteen years of age, which is the scope of age of the participants of this inquiry. This is the most complete stage due to the fact that learners possess an abstract, idealist, and logical way of thinking.

Piaget's study about the four stages of cognitive development was carried out in order to prove that the mind of pupils is not less superior to the mind of an adult. On the contrary, they are different in how students start thinking since they are born and in how they think as they grow up.

The relevance the theory of cognitive development of learners has on this research for the reason that the researchers made the association between the stages Piaget described with the stages the subjects of this study are, nowadays.

Even though, most of the participants of this thesis study are at the formal operational stage since they are capable of develop deductive reasoning, distinguish abstract things, and use their way of thinking logically. Accordingly, their way of thinking is described as mature in spite of their range of age (from eleven to fifteen years old) due to the fact that the subjects of this inquiry started to develop their cognitive necessities at a higher level. For instance, creating and developing ideas about a matter, thinking about a wrongly made decision, or thinking before acting in front of a situation that may present a cognitive conflict for them. There are some participants of this investigation that are at the concrete operational stage since they have not developed nor reached their higher level of cognitive necessities that were previously mentioned.

Hence, in order to have a better comprehension of this research, relevant theories are emphasized to have a complete point of view about the issues the researchers have taken into consideration when conducting the “Learning by Doing” strategy as a whole. Yet, another significant matter for this study is metacognition that will be explained in the part 2.5 to highlight its connection with the studies previously mentioned.

2.5 Metacognition

For a pupil to be in full control over her/his own learning, there are certain requirements to be met: as the factors proposed on the student – centered learning approach and the relationship of what it is being learnt respecting the expected development of the cognitive stages of a student. However, there is a higher order thinking skill namely metacognition that is acknowledged and addressed at the moment of achieving a full control of one’s learning process. This term will be explained as follows:

In 1979 and prior to become one of the most important authors on the theory of metacognition, John Flavell coins the concept “Metacognition” and he defines it as “(...) *the knowledge about knowledge and regulation of one’s cognitive activities learning processes (...)*” (Flavell, 1979 as cited in Veenman, Van Hout – Wolters, & Afflerbach, 2006, p.3).

Livingstone (1997), Senior Research Scientist on Educational Psychology from the University of Buffalo in New York City, United States, defines metacognition as a

“(...) higher order thinking which involves active control over the cognitive processes engaged in learning (...)” (Jennifer A. Livingstone, 1997, Retrieved from: gse.buffalo.edu/fas/shuell/cep564/metacog.htm). To put it in other words, learners are capable and in charge of building their knowledge through multiple type of activities by using their cognitive processes.

On her investigation “Metacognition: An Overview” carried out in 1997, Livingstone points out proponents on the subject of metacognition where she mentions that there exist three subcategories in regard with metacognitive knowledge that where first developed and studied by John Flavell (1979) on an article of his own creation denominated “Metacognition and Cognitive Monitoring: A new area of Cognitive – Developmental inquiry”. They are *“(...) knowledge of a person variable, knowledge of tasks variables, and knowledge of strategy variables (...)”* (Flavell, 1979 as cited in Livingstone, 1997, Retrieved from: gse.buffalo.edu/fas/shuell/cep564/metacog.htm).

Having in consideration that metacognition is one of the themes this thesis study has as its theoretical support, the subcategories previously pointed out will be briefly described in order to have a better understanding on the topic. Furthermore, having under consideration what Livingstone (1997) declares on her research about metacognition *“(...) Flavell divides metacognition into three categories: knowledge of a person variable, knowledge of tasks variables, and knowledge of strategies variables (...)”* (Livingstone, 1997, Retrieved from: gse.buffalo.edu/fas/shuell/cep564/metacog.htm).

Knowledge of a person variables is the first subcategory of metacognitive knowledge. It refers to the general knowledge a pupil possesses in terms of how he/she learns and processes the information acquired. As it is shown by a large amount of students who prefer study in a quiet environment rather than a crowded place due to the fact that in a calm and peaceful field they can concentrate better.

Knowledge of tasks variables is the second subcategory of metacognitive knowledge. It refers to the awareness learners have of the aspects and variables that are involved in the cognitive tasks and development of knowledge. For instance, pupils are aware of the variables when studying for a test.

Knowledge of strategies variables is the third subcategory of metacognitive knowledge. It refers to how and when students use the metacognitive strategies appropriately.

Likewise, the connection between metacognition and its strategies is made clear by O'Malley & Chamot (1990) who says that “(...) *metacognitive strategies happen in three steps, namely plan, monitoring, and evaluation (...)*” (O'Malley & Chamot, 1990 as cited in Diaz, 2015, p.90). Equally important is to have a brief description of the steps a metacognitive strategy requires to happen in order to associate its meaning with what is being related in section 2.5.

The first step suggested by O'Malley & Chamot (1990) is “(...) *Plan (...)*” (O'Malley & Chamot, 1990 as cited in Diaz, 2015, p.90). It is planning the objective of every activity previously chosen by the teacher for the learners, taking into account the materials they will need with the purpose of applying a metacognitive strategy.

The second step suggested by O'Malley & Chamot (1990) is “(...) *Monitoring* (...)” (O'Malley & Chamot, 1990 as cited in Diaz, 2015, p.90). The teacher is controlling the process of learning without interfering. He/She acts as a guide by giving the pupils the tools but, at the end, they will construct their knowledge.

The third and final step suggested by O'Malley & Chamot (1990) is “(...) *Evaluation* (...)” (O'Malley & Chamot, 1990 as cited in Diaz, 2015, p.90). It is evaluating if the students achieve on working with a metacognitive strategy by seeing the final results in their learning process and how productive the classes were.

Being aware of the studies and theories that analyze the psychological area of this thesis study, it is relevant to emphasize the signification of memory on this inquiry. Systems of Memorization will be described in the part 2.6 for further comprehension on the issue of how students retain the vocabulary learnt when implementing the strategy.

2.6 System of Memorization

Memory is one of the most essential processes executed by the human brain here knowledge and information about the world is retained. As a matter of fact, it is a system divided into several subsystems that processes the information in an organized form.

On this investigation and taking into consideration what Schacter & Tulving (1994) asserted that “(...) *there are terms associated with the human system of memorization denominated short term memory, long term memory, working memory, declarative memory: episodic memory and semantic memory, procedural memory, and perceptual representation (PRS) (...)*” (Schacter & Tulving, 1994, p.23 – 25). These subsystems will be described as follows in order to have a complete understanding on the matter of the constructivist strategy denominated “Learning by Doing”.

The short term memory or primary memory is in charge of retaining a certain amount of information in a short period of time. Even though it is the first subsystem human

beings use to store their knowledge, its terminology comes from the working memory that will be further described.

Nonetheless, the long term memory is in charge of storing the information that is retained on the brain for longer periods of time.

As it was mentioned before, the working memory has been associated as being part of the short term memory by theoreticians of the field. It takes part as one of the most significant subsystems in charge of retaining, processing, and manipulating the information stored. Even when, its capacity of retaining and processing the actual information is limited.

Notwithstanding, it is in charge of tasks like reasoning and understanding the information that has been acquired through auditory and visual aids.

The declarative memory or implicit memory is in charge of recalling the information stored and consciously providing it a usage.

Declarative memory is divided into episodic memory and semantic memory. On the one hand, episodic memory specifically alludes to the first event someone has experienced. For example, the first day of school. On the other hand, semantic memory refers to an abstract knowledge of the world. For instance, the author of *La Mona Lisa* is Leonardo Da Vinci.

Procedural memory often known as explicit memory or nondeclarative memory is internal which means that, it does not collect any representation of the external world and it is connected to implicit learning and memory functions. Putting it in other words, the knowledge can be translated into actions. For example, driving a car or swimming.

Through perceptual representation (PRS), human beings are able to identify objects and words in an unconscious manner that helps with the relevance of the human system of memorization.

System	Other terms	Subsystems	Retrieval
Procedural	Nondeclarative	Motor skills Cognitive skills Simple conditioning Simple associative learning	Implicit
Perceptual representation (PRS)	Nondeclarative	Visual word form Auditory word form Structural description	Implicit
Semantic	Generic Factual Knowledge	Spatial Relational	Implicit
Primary	Working	Visual Auditory	Explicit
Episodic	Personal Autobiographical Event memory		Explicit

Figure 2 “Major Systems of Human Learning and Memory”. Figure 2 (1994) shows the human system of memorization and its subsystems that are associated to the cognitive development of learners and the acquisition of vocabulary (Schacter & Tulving, 1994, p.26).

CHAPTER 3
METHODOLOGICAL FRAMEWORK

Introduction

This section has been divided into nine parts and each one of them allows the lecturer to have an enlightenment on the structure this chapter has been based on. The research paradigm, the setting, the sampling, the participants, the instruments, the ethical considerations, the interventions, the data collection procedure, and the data analysis are the main aspects that framed this section of the study before, when, and after the application of the constructivist strategy that uses the elaboration of didactic material.

3.1 Research Paradigm

In order to collect the results of the implementation of the “Learning by Doing” strategy, the researchers of this thesis study have decided to carry out a quasi – experimental inquiry built on the quantitative tradition. Therefore, for a better and a complete comprehension of what it means base an investigation on a quantitative paradigm, it is of a great significance to incorporate a definition of the conceptualization.

Abawi (2008) declares that a quantitative research is “(...) *a process of inquiry based on testing a theory composed of variables, measured with numbers, and analyzed using statistical techniques (...)*” (Abawi, 2008, p.5).

As it has been pointed out, this study has been conducted under a quasi – experimental design by the researchers for the reason that the strategy previously mentioned has been developed through control subunits and through experimental subunits, having in consideration the vocabulary proposed on the 2016 Curricular Bases and on the 2016 Study Programs for school 1. On the contrary of what it has been decided for the school institution N°2 by the researchers where the constructivist strategy denominated “Learning by Doing” has been applied having under consideration the English student book given by the Chilean Ministry of Education. Thus, it is important to explain the differences between and experimental design, a quasi – experimental design, and a nonexperimental design that frame a thesis study.

According to Hernández – Sampieri (2014), an experimental inquiry is “(...) a study where one or more independent variables are intentionally manipulated (supposed antecedent causes) to analyze the consequences it has on one or more dependent variables (supposed consequent effect) in a control situation (...)” (Hernández – Sampieri, 2014, p.129). In the words of Hernández – Sampieri (2014), quasi – experimental investigations are

“(...) the subjects that are not designated at random to previously established groups nor are designated to previously established couples. Although, these groups are formed before the experiment. They are intact groups (the reason for their ascent and how they have been formed is independent from the experiment) (...)” (Hernández – Sampieri, 2014, p.151).

In the line of explaining the designs a research may adopt in its structure, Hernández – Sampieri (2014) says that a nonexperimental study is

“(...) not the maker of any particular situation. However, situations that exist already are observed. They are not intentionally provoked by the researcher(s). On any nonexperimental thesis study, the independent variables happen and it is not possible to manipulate them. There is not direct control on them nor direct influence since they already happened; as well as their effects (...)” (Hernández – Sampieri, 2014, p.152).

Even though this inquiry has as its main objective to prove the effectiveness of the constructivist strategy that uses the elaboration of didactic material, the researchers

expect an improvement on the vocabulary pupils are working with. This is measured through tests that are implemented to the subjects of this investigation when concluding the control subunits and the experimental subunits. This type of measurement answers to what is best known as a time – series design.

The sample of this research is of a paired kind, which according to Lani (2016), CEO and Founder of the Statistics Solutions Corporation in Florida, The United States, *“(...) is a statistical procedure used to determine whether the mean difference between two sets of observations is zero. In a paired sample t – test, each subject or entity is measured twice, resulting in pairs observations (...)”* (Lani, 2016, Retrieved from: <http://www.statisticssolutions.com/manova-analysis-paired-sample-t-test/>).

3.2 The Setting

Subsidized Educational Establishments in El Belloto and in Villa Alemana, 5th. Region of Valparaíso, Chile.

Two subsidized schools were chosen to implement the “Learning by Doing” strategy. In order to protect their identities and their privacy, the school institutions names’ have been kept in the anonymity and they have been replaced by school 1 and by school 2.

The setting attempts to describe in detail the characteristics both educational establishments have. Accordingly, and in order to have a complete understanding of the setting, both schools have been separated due to its differences presented as the study was performed.

School Institution N°1

The first educational establishment is located in El Belloto, Quilpué, 5th. Region of Valparaíso, Chile and it is situated on a residential area that is easily accessible by the public transport.

It is a lay religious orientation school and it is a subsidized school institution, which means that a part of its economical sustenance is delivered by the government of Chile and the other portion comes from the economical sustenance of the families attending the educational establishment N°1.

According to the CRF and the AIM (2016) better known as the “Comité Retail Financiero” (Financial Retail Comity) and the “Asociación de Investigadores de Mercado” (Association of Market Investigators) that are the entities in charge of classifying the Chilean population in socioeconomic classes, the majority of pupils going to school 1 are at the “D” level in the socioeconomic status that is equivalent to “(...) *vulnerable families* (...)” (El Mercurio Newspaper, 2016, Retrieved from: www.emol.com/noticias/Economia/2016/04/02/796036/Como-se-clasifican-los-grupos-socioeconomicos-en-chile.html).

It has a type of education namely “Co – Education”, which means that male and female students are accepted by the school that seeks an integral development of the learners attending the school institution N°1.

It has a total amount of 10 grades; one grade per level starting from prekindergarten up to the 8th. elementary grade with an average of 240 pupils in total.

The educational establishment N°1 has one period of classes only, which is in the morning where the students go to school from 8 am. to 2 pm.

It has a teacher staff of 19 teachers, where one of them imparts the English lessons. Hence, the school institution N°1 does not possess an English department.

It has a total amount of 3 English hours per level starting from the 5th. primary grade, which are conveniently divided as 2:1. Putting it in other words, two pedagogical hours are carried out in the morning; one day of the week while the remaining pedagogical hour takes place other day of the week; in the afternoon and although the pupils do not possess a full – time class schedule, most of them are involved in an extra – curricular activity.

Even though it is unofficial for the reason that there is not any official certification from the Ministry of Education of Chile, the school institution N°1 has an A1 level of English according to the CEFR (Common European Framework of Reference for Languages). This was assumed by the researchers' observations at her internship. Her observations were backed up with the learners' English averages from the first semester.

Concerning the infrastructure, the school institution N°1 counts with various facilities where pupils can develop their daily activities. Nevertheless, the educational establishment N°1 does not have a roofed gymnasium but the students practice sport activities promoting a healthy living at the school's patio; where learners spend most of their time during breaks.

School Institution N°2

The second educational establishment is located in Villa Alemana, 5th. Region of Valparaíso, Chile and it is situated on a residential area that is easily accessible by the public transport.

It is a lay religious orientation school and it is a subsidized school institution, which means that a part of its economical sustenance is given by the government of Chile and the other portion is delivered by the families going to the educational establishment N°2.

According to the CRF and the AIM (2016), the majority of students attending the education establishment N°2 are at the "C1" level on the socioeconomic status that is equivalent "(...) *medium class families* (...)" (El Mercurio Newspaper, 2016,

Retrieved from: www.emol.com/noticias/Economia/2016/04/02/796036/Como-se-clasifican-los-grupos-socioeconomicos-en-chile.html).

It has a type of education denominated “Co – Education”, which means that male and female learners are admitted by the school that seeks an integral development of the pupils going the school institution N°2.

It has a total amount of 14 grades; one grade per level starting from prekindergarten up to 4th. senior year with an average of 343 students in total.

The educational establishment N°2 has two periods of classes. One period is in the morning from 8 am. to 2pm. where learners from 5th. primary grade to 4th. senior year go to school and the second period in in the afternoon from 2 pm. to 8 pm. where pupils from prekindergarten to 4th. primary grade attends to the school institution N°2.

It has a teacher staff of 28 teachers, where two of them impart the English lessons. One of them is focused on primary education and the other is focused on secondary education. Nonetheless, the educational establishment N°2 does not count with an English department.

It has a total amount of 3 English hours per primary level starting from the 5th. primary grade, which are conveniently divided as 2:1. Putting it in other words, two pedagogical hours are carried out in the morning; one day of the week while the remaining pedagogical hour takes place other day of the week; in the afternoon.

Notwithstanding, the secondary education has a total amount of 4 English hours that are not so conveniently divided as 2:2 or as 3:1. Although the students do not

possess a full – time class timetable, most of them are involved in an extra – curricular activity.

The school 2 has a A2 level of English according to the CEFR and the Ministry of Education of Chile through an official certification obtained through the 2015 English SIMCE Test Results.

Respecting the infrastructure, the school institution N°2 has diverse facilities where learners can develop their daily activities. However, the educational establishment N°2 does not count with a roofed gymnasium but the pupils practice sport activities promoting a healthy living at the school's patio, where students spend most of their time during breaks.

3.3 Sampling

As it has been previously pointed out, the designated participants of this thesis study to apply the previously mentioned strategy were specified by the school institutions since they were the levels in charge of the researchers in their practicum centers.

Therefore, the researchers were not able to define the groups at random.

As the researchers were conducting this inquiry through their internships and as they had one grade per level, they adopted the structure of a quasi – experimental investigation in order to develop the research properly. The researchers worked with control subunits and with experimental subunits instead of working with control groups and with experimental groups due to the reasons previously pointed out.

On the contrary, the selection of the control subunits and the experimental subunits were indeed defined randomly.

3.4 Participants

On the one hand, this study was implemented to students of a 6th., 7th., and 8th. grades from the educational establishment N°1. On the other hand, this thesis study was applied to learners of a 7th. elementary grade and to pupils of a 2nd. senior year from school 2. In order to compare and contrast the results before and after implementing the constructivist strategy namely “Learning by Doing”.

For the school institution N°1, the 6th. primary grade has 24 students, the 7th. elementary grade possessed 25 learners, and the 8th. elementary grade counted with 24 pupils. Additionally, for the educational establishment N°2, the 7th. elementary grade has 31 students and the 2nd. senior year possessed 28 learners. As a result, the total amount of subjects participating on this inquiry was 132 pupils.

3.5 Instruments

For this investigation, three different instruments were created. Lesson plans, rubrics, and tests were used to validate the application of the constructivist strategy that uses the elaboration of didactic material when this quasi – experimental research was performed.

First of all, the lesson plans were thought and designed by the researchers of this study following the format and the structure of the lesson plans of each school institution, respectively. They were checked by the mentor teachers in order to reassure the design and the format of the lesson plans and they were validated by thesis advisors in charge of other thesis studies.

It is relevant to mention that for the educational establishment N°1, the subjects for the lesson plans were taken from the 2016 Curricular Bases and from the 2016 Study Programs. However, for school 2, the themes for the lesson plans were taken from the student's book; specifically, from the unit covered at the moment of the implementation of the “Learning by Doing” strategy.

Second of all, the rubrics were thought and designed by the researchers of this inquiry following the format and the structure of the rubrics of each school, respectively. They were checked by the mentor teachers in order to reassure the design and the format of the rubrics and they were validated by thesis advisors in charge of other investigations.

It is significant to point out that for both school institutions, the rubrics counted with achievement indicators that designated a numerical value to each task that must

have been accomplished when using the strategy previously mentioned and when the constructivist strategy namely “Learning by Doing” was not used in order to reach the main purpose of this investigation, which is the acquisition and the learning of vocabulary in an EFL context.

Finally, the tests were thought and designed by the researchers of this research following the format and the structure of the tests of each educational establishment, respectively. They were checked by the mentor teachers in order to reassure the design and the format of the tests and they were validated by thesis advisors in charge of other studies.

It is important to point out that for both schools, the tests were divided in control tests and in experimental tests that were adapted from two books concerning the acquisition and the learning of vocabulary in an EFL environment denominated “Test Your Vocabulary” (Volumes 1,2,3,4, and 5) from “Penguin” editorial and “Check Your Vocabulary for PET” from “Macmillan” editorial. Nevertheless, the contents were taken from the 2016 Curricular Bases and from the 2016 Study Programs communicated by the Ministry of Education of Chile. Notwithstanding for both schools, when the control tests were evaluated; the contents were previously seen using the grammar – translation method that is the method both school institutions have built their English education and their English lessons on. However, when the experimental tests were evaluated; the contents were previously seen using the constructivist strategy that uses the elaboration of didactic material with the aim of demonstrating the effectiveness of the “Learning by Doing” strategy.

3.6 Ethical Considerations

For both educational establishments, the researchers of this thesis study did not take into account the final marks of each control subunit test and of each experimental subunit test as a real mark. Nonetheless, the researchers took into consideration the mark as a summative mark that was added to the class work final mark.

On the contrary, the elaboration of the student's didactic material to learn the vocabulary of each experimental subunit was in consideration as a real mark in order to reward the commitment, the dedication, and the effort each learner put to learn vocabulary.

3.7 Interventions (Procedure)

The application of the strategy previously mentioned and its procedure had four relevant stages of school 1 and on the school institution N°2.

The first intervention that the researchers made was denominated as the description and the explanation of the constructivist strategy namely “Learning by Doing”. The second intervention that the researchers made was focusing on the vocabulary spot of each subunit (control subunits and experimental subunits). The third intervention that the researchers made was focusing on the language spot of each subunit (control subunits and experimental subunits). The fourth intervention that the researchers made was, which was the final stage of the implementation of the constructivist strategy that uses the elaboration of didactic material, was the evaluation of each subunit (control subunits and experimental subunits).

In order to have a complete comprehension of the four stages and their procedure, they will be described as follows.

The first step of the procedure of this inquiry lasted 1 English lesson for both educational establishments. It was the description and further explanation of the application of the “Learning by Doing” strategy. It concerned the description and the explanation of each control subunit and each experimental subunit, the division of the units in control subunits and in experimental subunits, the explanation of the process of evaluation of the elaboration of didactic material (rubrics), the explanation of the process of evaluation of the control subunits and the experimental subunits

(tests), and the explanation of the dates and the time dedicated to each control subunit and each experimental subunit.

The second step of the procedure of this investigation took 4 English lessons for both schools. It was the vocabulary spot of the control subunits and the experimental subunits. It encompassed the elaboration of didactic material when implementing the strategy previously pointed out and it concerned the elaboration of didactic material when the constructivist strategy namely "Learning by Doing" was not applied.

The third step of the procedure of this research lasted 3 English lessons for both school institutions. It was the language spot of the control subunits and the experimental subunits. It encompassed the explanation of the grammatical structure(s) of each subunit (control and experimental) using the vocabulary spot of the same unit to make the explanation contextual.

The fourth and the final step of the procedure of this study took 1 English lesson for both educational establishments. It was the evaluation of each subunit (control subunits and experimental subunits). It is significant to mention that when each subunit ended, several vocabulary tests were adapted to measure the vocabulary learnt by the pupils.

Thus and regarding the total amount of English lessons and time devoted to the implementation of the constructivist strategy that uses the elaboration of didactic material, they were 3 weeks dedicated to each control subunit and to each experimental subunit.

3.8 Data Collection Procedure

The procedure of gathering the data the researchers needed possessed two important parts on both schools.

The first part was the application of the control tests and the experimental tests in order to measure the vocabulary acquired and learned when the “Learning by Doing” strategy was implemented and when the grammar – translation method was used. The second part of the data collection procedure was the analysis of the control tests’ and the experimental tests’ results through the T – test, which is a mathematical and statistical kind of measurement.

The first section was concerned with the application of tests (both; control and experimental) in order to evaluate the content seen in the respective subunit. Although, the tests followed the school institutions design and format; the grammatical focus or language spot did not count as part of the researchers focus on this thesis study for the reason that vocabulary was the researchers biggest interest and field of concern in this inquiry.

The second section was encompassed with the analysis of the results using a mathematical and statistical type of measurement denominated “T – test”. This instrument can be implemented to dependent samples and to independent samples. For this particular setting, a dependent analysis was carried out since the researchers had one grade per level. They compared and contrasted the control tests’ results and the experimental tests’ results of the subjects of this investigation. However, only the data collected from the participants who sat for the control test

and the experimental test were taken in consideration as to not distort the final results. Putting it in other words, those students who took the control test only or the experimental test only were not considered in the data analysis procedure.

3.9 Data Analysis

In the following tables and in the following graphs, the data gathered for this research will be shown in order to clarify the results obtained during the application of the strategy previously pointed out.

The figures that will be shown correspond to the percentages of correct answers before and after the implementation of the constructivist strategy namely “Learning by Doing”. Additionally, a comparison between the control subunits and the experimental subunits will be shown.

CHAPTER 4
CONCLUSION

Conclusion

As in all quasi – experimental design, the conclusion of this study is of a quantitative nature accordingly, it is solely connected with the data analysis and the hard data results. On the one hand, it can be concluded that the implementation of the constructivist strategy that uses the elaboration of didactic material in an EFL context improved the learners' learning of vocabulary on the 6th., 7th., and 8th. grades from the educational establishment N°1 located in El Belloto, and on the 7th. course from school 2 situated in Villa Alemana, 5th. Region of Valparaíso, Chile. Putting it on other words, the “Learning by Doing” strategy was effective in order to acquire explicit vocabulary in an EFL environment.

On the other hand, the application of the strategy previously mentioned in an EFL context did not improve the pupils' acquisition and learning of explicit vocabulary in the 2nd. senior year from the school institution N°2 located in Villa Alemana, 5th. Region of Valparaíso, Chile.

It means that the constructivist strategy namely “Learning by Doing” did not show improvement in order to acquire and, possibly, learn explicit vocabulary in an EFL environment.

Proof of what has been explained on the previous paragraphs are that in 1 of the 2 educational establishments that cooperated in this thesis study, the implementation of the constructivist strategy that uses the elaboration of didactic material was successful. 4 of the 5 grades that participated in this inquiry improved their learning of vocabulary using the “Learning by Doing” strategy. 1 of the 5 courses that took

part in this investigation did not improve their learning of vocabulary using the strategy previously pointed out but, the 2nd. senior year improved their learning of vocabulary using their previous methodology that is translating and memorizing isolated words. In 4 of the 4 primary grades that cooperated in this research, the application of the constructivist strategy denominated “Learning by Doing” was successful. However, in the only secondary course that participated in this study, the implementation of the constructivist strategy that uses the elaboration of didactic material was not successful. In 7 of a total amount of 9 units evaluated after the application of the “Learning by Doing” strategy, the average of vocabulary learned by the subjects of this thesis study showed a significant increase.

Hence, the working hypothesis is conclusive for the setting of school 1 situated in El Belloto and for the setting of primary education of the school institution N°2 located in Villa Alemana. However, the null hypothesis is conclusive for the setting of secondary education of the educational establishment N°2 due to the fact that the strategy previously pointed out was not efficient enough to improve the students’ acquisition and learning of explicit vocabulary.

The factors that give account of the results are extensively analyzed on Chapter 5: “Discussion” where theories and studies behind this inquiry are also confronted.

CHAPTER 5
DISCUSSION

Discussion

The following chapter is devoted to the analysis of the results obtained during the investigation, which were shown in the tables in the previous chapter, in light of the theory behind the “Learning by Doing” strategy. As seen in the results, they were favorable for the acceptance of the working hypothesis, but only for the second cycle of primary education (6th, 7th, and 8th grade). On the other hand, in the case of the first cycle of the senior year (2nd senior year), the strategy did not show effectiveness in the implementation of “Learning by Doing”. The researchers believe that this may respond mainly to age and cognitive development, which is prevailing at the moment of the implementation of any innovative strategy.

In terms of age and cognitive development, the strategy showed to be successful in students whose ages range from 11 to 14 years of age and that belong to the concrete operational stage, belonging to the second primary education cycle of education (6th, 7th, and 8th grade).

Piaget (1967) suggests, since those students that are in the concrete operational stage they are capable of using logical thought, identify specific events, but they still struggle with the abstract development. This strategy was innovative for them and it had an excellent reception on their part, since the usual way to approach vocabulary is that of translating and memorizing lists of words. While in the first cycle of a senior year (2nd senior year), they are already in the formal operational stage in which they are capable of using logic to cope with problems, think about hypothetical and abstract concepts, understand metaphors, among others.

Consequently, the activities carried out, were the same used with the second primary cycle of education. However, students were reluctant to change the way they have always worked out vocabulary items, namely translation of extended paragraphs and memorization of words in isolation. Even though this may seem boring, it does not pose any challenge and thus, no special effort from part of the students in order to do this type of activities. Although, with the application of the strategy, they had to work at home and in class, because they were asked to produce outcomes, this was seemingly a disadvantage since they were not enthusiastic to be asked to actually work in class. Teenagers were actually able to accomplish most of the tasks assigned, but were not receptive to changes, at least at the very beginning with the first intervened units, after a while they demonstrated to have accepted the strategy and engaged in the activities, but because of time constraints, the investigation came to an ending.

The researchers realized that constructivism should be implemented from the very first grades, since at early ages, students are more receptive to any innovation. On the contrary, older students, especially teenagers seem to take a longer time to break with their routines and to adapt to new strategies, activities or methods.

However, the educational establishments of this investigation, were more familiar with the grammar translation method and the use of dictionaries, books, and worksheets as support material in classrooms, as a result, most of the students, who were used to working with this type of methodology at the moment of the implementation of the “Learning by Doing” strategy, presented some difficulties to associate the new strategy and to work it, since the “Learning by Doing” requires a

lot of time to work in classes and motor skills to elaborate the didactic material. Though, in the case of the second primary education, learners were more familiar to work with activities that require motor skills, creativity, and active participation of the students in the classroom.

Additionally, another point to consider in this thesis study that was relevant to mention, was how the system of memorization was organized into the progress of the vocabulary learning of the students. According to Schacter & Tulving (1994), there exists various types of memory in a person, indeed in relation to this investigation, the researchers concluded that learners from both schools were involved to work with the procedural memory, for the reason of the application and production of the strategy that required the motor skills, being a beneficial factor to learn through the elaboration of the student's skills and as a consequence it will remain for a long period of time.

Thus, the researchers believe that these could be the principal aspects in the difference of the test's results between the second primary cycle and the senior year. In this respect, another aspect that is relevant to explain in this chapter that could be an interference factor in relation with the results of this thesis study, is the type of methodology or strategy used by the teachers of School 1 and School 2. Therefore, the results from chapter 3, showed in the previous tables were positive enough to demonstrate the effectiveness of the strategy "learning by Doing" for the second primary education from both schools, as a positive result of the experimental subunits from School 1 and School 2 were clearly effective in the implementation of the strategy compared with the control subunits.

Nevertheless, the first cycle of a senior year did not demonstrate effectiveness in relation to the strategy implemented, with a higher result of the control subunits in comparison to the experimental subunits.

As a final reflection, the researchers agree on the effectiveness of the “Learning by Doing” strategy as a pedagogical tool for children, and on the need for further research on more adolescence students, in this case the investigation was applied to learners of a senior year (2nd senior year), but considering the schedule time in order to apply the strategy in a longer period of time. As the time to apply the strategy was brief, the researchers believe that it will be more effective to take more time to apply the strategy for senior years, in terms of getting enough time for them, in order to get familiar and associate this new strategy to their cognitive development and learning.

References

Abawi, K. (2008). Qualitative and Quantitative Research. *Reproductive Health Research Methodology Training*, 1, 3 – 12.

Agencia de Calidad de la Educación. (2013). Resultados SIMCE III Medio 2012: Inglés. Retrieved on December 2016, from: www.agenciaeducacion.cl/wp-content/files_mf/sr_ingles_iiimediao_2012.pdf

Carlos Henríquez Calderón. (2015). Simce de Escritura a Sextos Básicos revela deficiencias en Vocabulario y Puntuación. Retrieved on August 2016, from: www.biobiochile.cl/noticias/2015/08/13/simce-de-escritura-a-sexto-basicos-revela-poca-variedad-en-vocabulario-y-profundizacion-de-ideas.shtml

Corsini, R., Wedding, D., & Dumont, F. (2008). *Current Psychoterapies*. California, the United States: Thomson Brooks/Cole.

Diaz, I. (2015). Training in Metacognitive Strategies for Students' Vocabulary Improvement by using Learning Journals. *Issues in Teachers' Professional Development*, 17(1), 87 – 102.

Dierking, L. (1991). Learning Theory and Learning Styles An Overview. *The Journal of Museum Education*, 16(1), 4 – 6.

El Mercurio. (2016). Infografía: Cómo se clasifican los nuevos grupos socioeconómicos en Chile. Retrieved on December 2016, from: www.emol.com/noticias/Economia/2016/04/02/796036/Como-se-clasifican-los-grupos-socioeconomicos-en-chile.html

Figure 1. (1986). Retrieved on December 2016, from:
<http://www.csu.edu.au/division/student-learning/home/csu-academics/sessional-staff/know-your-students/what-are-my-learners-learning>

Gail, M. & Brader – Araje, L. (2002). The Impact of Constructivism on Education: Language, Discourse, and Meaning. *American Communication Journal*, 5(3), 1 – 10.

Hernández – Sampieri, R., Collao, C., & Baptista Lucio, P. (2014). *Metodología de la Investigación*. México D.F., México: McGraw – Hill/ Interamericana Editores, S.A.D.E

Jennifer A. Livingstone. (1997). Metacognition: An Overview. Retrieved on November 2016, from: gse.buffalo.edu/fas/shuell/ap564/metacog.htm

Lani, J. (2016). Paired Sample T – Test. Retrieved on December 2016, from:
<http://www.statisticssolutions.com/manova-analysis-paired-sample-t-test/>

Moghadam, S.H., Zainal, Z., & Ghaderpour, M. (2012). A Review on the Important Role of Vocabulary Knowledge in Reading Comprehension Performance. *Procedia – Social and Behavior Sciences*, 66, 555 – 563.

O'Neill, G. & McMahon, T. (2005). *Student – Centered Learning: What does it mean for Students and Lecturers?* In G. O'Neill, S. Moore, and B. McMullen (Eds), *Emerging Issues in the Practice of University Learning and Teaching* (pp. 27 – 36).
Dublín, Ireland: AISHE.

Pía Tabali Marín. (2013). Entrevistas a Expertos Chilenos sobre Metodología de la Enseñanza de Inglés: Pía Tabali. Retrieved on August 2016, from:
www.educarchile.cl/ech/pro/app/detalle?id=224342

Santrock, J.W. (2010). *Educational Psychology*. New York City, the United States: McGraw – Hill.

Schacter, D.L. & Tulving, E. (1994). *Memory Systems*. London, England: The MIT Press.

The Ministry of Education of Chile. (2013). Orientación Pedagógica: Vocabulario. Retrieved on July 2016, from: www.curriculumenlineamineduc.cl/605/articles-20771_recurso_pdf.pdf

Veenman, M.V.J., Van Hout – Wolters, B.H.A.M., & Afflerbach, P. (2006). Metacognition and Learning: Conceptual and Methodological Consideration. *Metacognition Learning*, 1, 3 – 14.

APPENDIXES

Appendix 1

Authorizations to implement the constructivist strategy of elaborating didactic material denominated “Learning by Doing”.

They are two different letters written formally addressing the members of the directive staffs of both educational establishments requesting for consent to implement the constructivist strategy previously mentioned namely “Learning by Doing” in the classrooms of the grades designated by the directive teams of both schools to the researchers.

It is important to emphasize that both letters were, personally, delivered to the members of the directive staffs of both school institutions who received them and accepted them for the researchers could implement the “Learning by Doing” strategy. Proof of what has been previously pointed out are the signatures and the stamps of the natural person representing the directive teams of both educational establishments.

However, the personal information of the representative person of the directive staffs of both schools that signed and stamped the letters is kept on the anonymity in order to protect their identities and privacy. Likewise, the name of both school institutions.

Appendix 2

Validity of the Instruments of the Thesis Study.

They are two different letters written formally addressing teachers who belong to the major of English Pedagogy or impart classes on the major of English Pedagogy at Universidad Nacional Andrés Bello (UNAB) requesting their validation of the evaluation instruments the researchers applied to the didactic material elaborated by the subjects of this thesis study that were, subsequently, applied to the subjects of this thesis study when the implementation of the constructivist strategy of elaborating didactic material denominated “Learning by Doing” was concluded.

It is important to highlight that both letters have an English version and a Spanish version for a better comprehension on what had been asked for on it. They were, personally, handed in to the validating teachers who received them and accepted them. Proof of what has been previously mentioned are the signatures of the teachers.

Appendix 3

English Lesson Plans for Control Subunits and Experimental Subunits.

The specific creation of the English lesson plans for the grades designated by the directive teams of both educational establishments for the researchers could implement the constructivist strategy of elaborating didactic material denominated “Learning by Doing”.

It is important to mention that both researchers adapted the English lesson plans to the system of lesson plans regent on both schools. Owing to what has been previously explained, the appendixes N°3 attached to this thesis study are different. They were, personally, delivered to the validating teachers who received them and accepted them. Proof of what has been previously pointed out are the signatures of the teachers.

Nevertheless, the personal information of the mentor teachers of both school institutions that accompanied the researchers is kept on the anonymity in order to safeguard their identities and privacy. Likewise, the name of the educational establishments.

Appendix 4

English Rubrics.

The English rubrics were applied, on a first instance, to the didactic material elaborated by the subjects of this thesis study and, on a second instance, to the participating subjects of both educational establishments.

It is important to emphasize that both researchers adapted the English rubrics to the system of rubrics regent on both schools. Owing to what has been previously explained, the appendixes N°4 attached to this thesis study are different.

They were, personally, handed in to the validating teachers who received them and accepted them. Proof of what has been previously mentioned are the signatures of the teachers.

However, the personal information of the mentor teachers of both school institutions that accompanied the researchers is kept on the anonymity in order to protect their identities and privacy. Likewise, the name of the educational establishments.

Appendix 5

English Tests for Control Subunits and Experimental Subunits.

The specific creation of the English tests to the grades designated by the directive staffs of both educational establishments for the researchers could implement the constructivist strategy of elaborating didactic material denominated “Learning by Doing” on control subunits and experimental subunits.

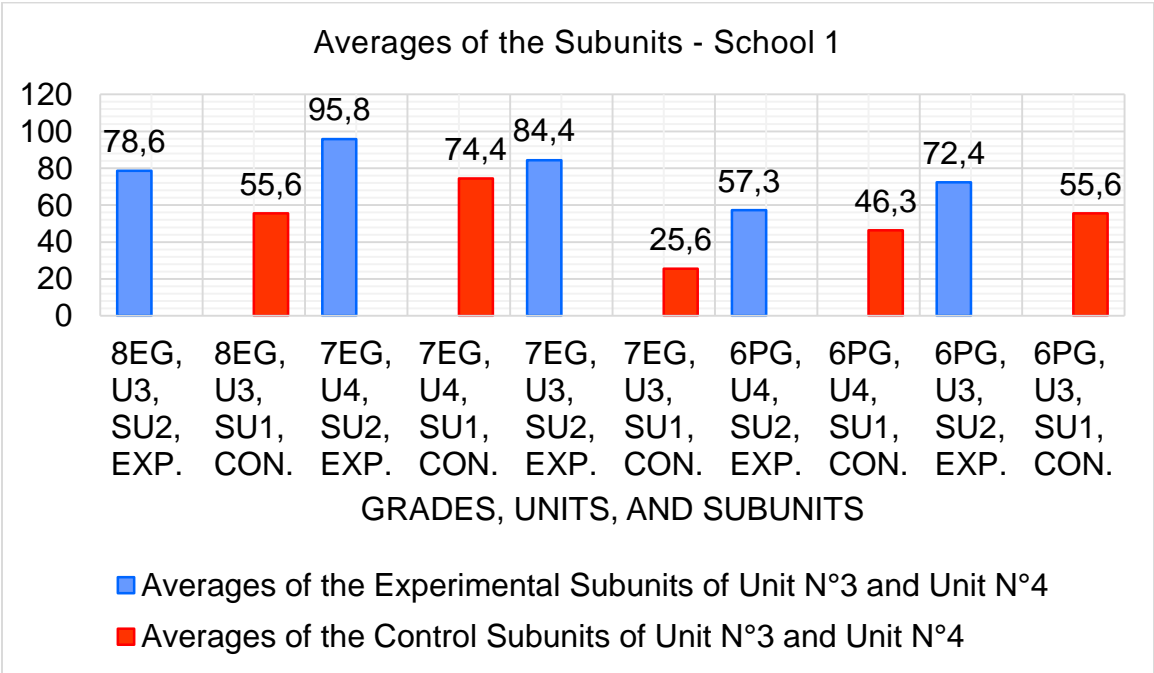
It is important to highlight that both researchers adapted the English tests to the system of evaluations regent on both schools. Owing to what has been previously explained, the appendixes N°5 attached to this thesis study are different.

They were, personally, delivered to the validating teachers who received them and accepted them. Proof of what has been previously pointed out are the signatures of the teachers.

However, the personal information of the mentor teachers of both school institutions that accompanied the researchers is kept on the anonymity in order to protect their identities and privacy. Likewise, the name of the educational establishments.

The following graph shows the final averages of control subunits and experimental subunits of units N°3 and N°4 of the grades from school 1.

The averages are the proof of the effectiveness of the constructivist strategy of elaborating didactic material denominated “Learning by Doing” in relation to the improvement in terms of the acquisition and, possible, learning of explicit vocabulary in an EFL classroom.

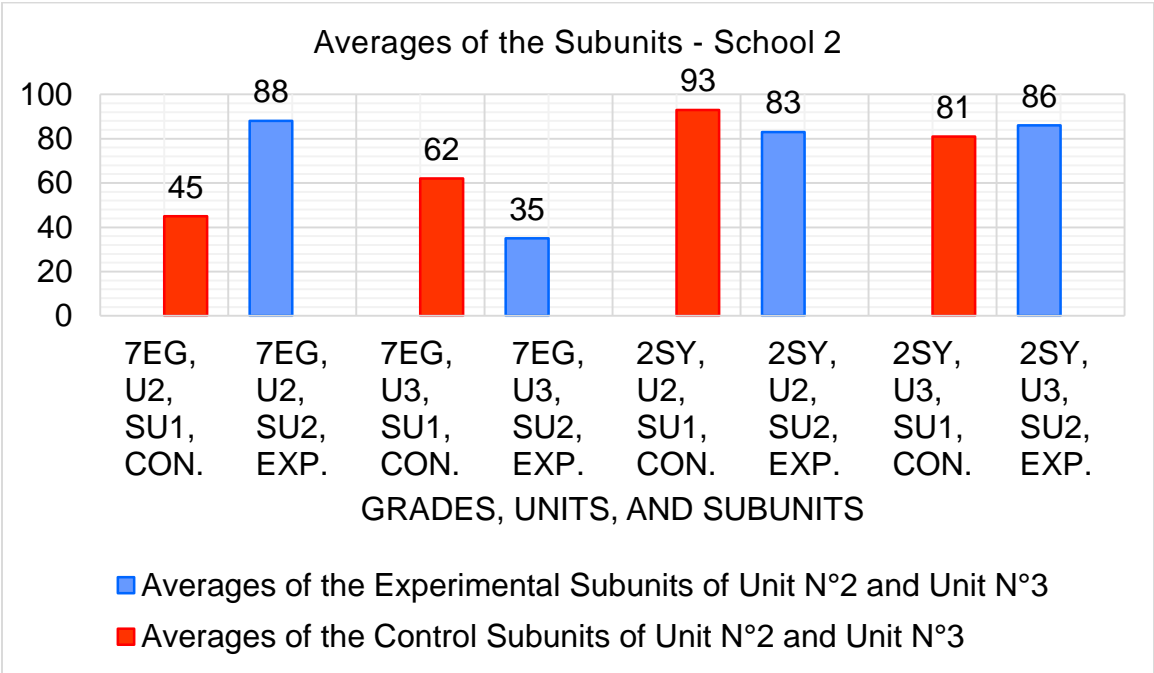


Graphic 1

Final Averages of the Control Subunits and the Experimental Subunits of Unit N°3 and Unit N°4 of the 6^{th.}, 7^{th.}, and 8^{th.} Grades from the Educational Establishment N°1

The following graph shows the final averages of control subunits and experimental subunits of units N°2 and N°3 of the grades from school 2.

The averages are the proof of the effectiveness of the constructivist strategy of elaborating didactic material denominated “Learning by Doing” in relation to the improvement in terms of the acquisition and, possible, learning of explicit vocabulary in an EFL classroom.

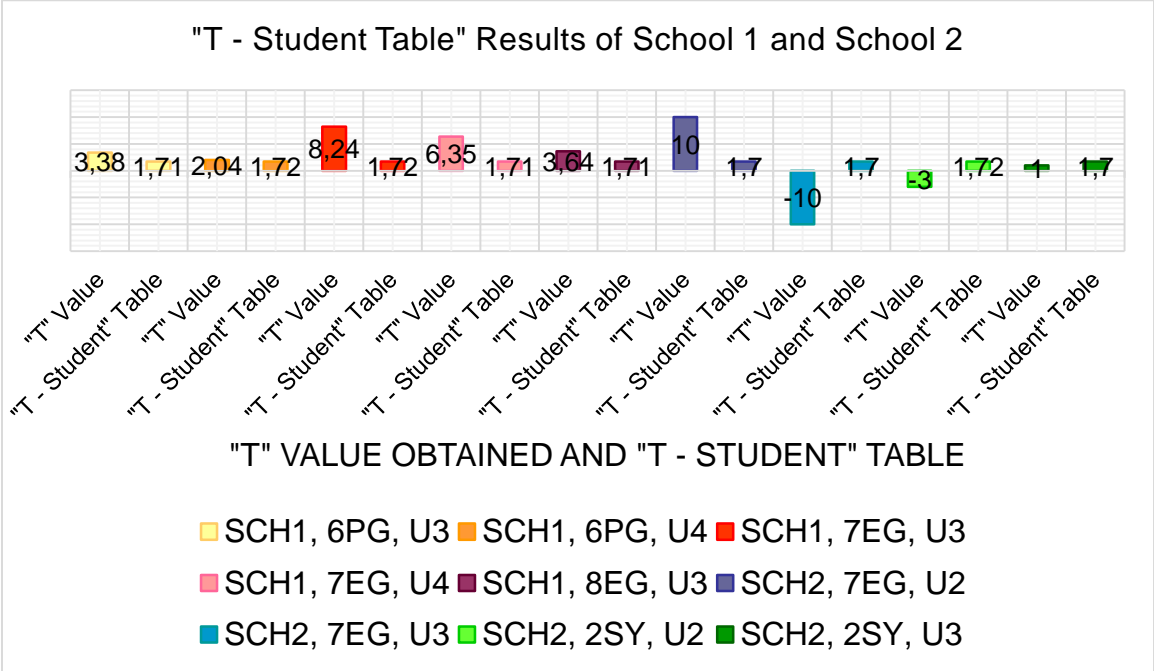


Graphic 2

Final Averages of the Control Subunits and the Experimental Subunits of Unit N°2 and Unit N°3 of the 7th. Elementary Grade and the 2nd. Senior Year from the Educational Establishment N°2

The following graph shows the final values of a statistical calculus made using a type of mathematical measurement denominated “T – Student” table to control subunits and experimental subunits of the total amount of units evaluated of the grades from both school institutions that participated on this thesis study.

The results exposed on this graph are, on the one hand, the values obtained from the statistical calculus made by the researchers when the constructivist strategy of elaborating didactic material namely “Learning by Doing” was conducted and, on the other hand, the accepted values given by the “T – Student” table in relation to the validity of the strategy previously mentioned.



Graphic 3

Final “T – Student Table” Results of Unit N°3 and Unit N°4 of the 6th., 7th., and 8th. Grades from the Educational Establishment N°1 and of Unit N°2 and Unit N°3 of the 7th. Elementary Grade and the 2nd. Senior Year of School 2

Table 1

An Insight on the 3rd. Unit and on the 4th. Unit of the 6th. Primary Grade from the Educational Establishment N°1

School 1				
6 th . Primary Grade				
	Unit N°3		Unit N°4	
	Subunit 1	Subunit 2	Subunit 1	Subunit 2
	Control Subunit	Experimental Subunit	Control Subunit	Experimental Subunit
Student				
1	57%	93%	40%	57%
2	36%	53%	50%	50%
3	43%	100%	30%	71%
4	79%	93%	50%	50%
5	64%	60%	20%	71%
6	93%	100%	60%	71%
7	21%	80%	50%	57%

8	50%	53%	80%	57%
9	57%	60%	20%	57%
10	43%	80%	70%	57%
11	43%	67%	10%	57%
12	43%	67%	10%	29%
13	50%	60%	70%	71%
14	64%	80%	50%	71%
15	93%	93%	40%	71%
16	86%	93%	60%	71%
17	36%	87%	30%	43%
18	50%	87%	70%	36%
19	71%	33%	30%	57%
20	50%	53%	50%	57%
21	71%	100%	100%	50%
22	36%	60%	30%	50%
23	43%	15%		

Averages	55,6%	72,4%	46,3%	57,3%
Summations	1279	1667	1020	1261

Table 1 shows the percentages of the responses answered correctly on units N°3 and N°4 of the 6th. primary grade from the school institution N°1.

Both units were divided in subunit 1 and subunit 2, which were denominated as control subunits and experimental subunits in order to have a better comprehension on how the acquisition, improvement, and possible learning of (new) vocabulary was evaluated.

Apart from what has been explained on the previous paragraph, Table 1 shows the final averages and the final summations of the responses answered correctly on units N°3 and N°4 that clarify the difference between subunits where the working methodology did not change and subunits where the implementation of the constructivist strategy of elaborating didactic material namely “Learning by Doing” took place.

Table 2

An Insight on the 3rd. Unit and on the 4th. Unit of the 7th. Elementary Grade from the Educational Establishment N°1

School 1				
7 th . Primary Grade				
Student	Unit N°3		Unit N°4	
	Subunit 1	Subunit 2	Subunit 1	Subunit 2
	Control Subunit	Experimental Subunit	Control Subunit	Experimental Subunit
1	94%	18%	100%	100%
2	6%	85%	57%	100%
3	19%	100%	57%	100%
4	25%	100%	100%	100%
5	19%	90%	86%	93%
6	19%	90%	86%	93%
7	38%	100%	86%	93%

8	44%	90%	57%	100%
9	31%	90%	86%	100%
10	13%	10%	50%	100%
11	38%	95%	93%	100%
12	25%	95%	79%	100%
13	25%	95%	100%	93%
14	13%	95%	64%	86%
15	19%	90%	71%	100%
16	13%	70%	50%	71%
17	25%	95%	79%	100%
18	19%	85%	57%	93%
19	6%	95%	50%	93%
20	6%	70%	71%	100%
21	25%	90%	64%	93%
22	31%	95%	64%	100%
23	38%	100%	93%	100%

24			86%	93%
Averages	25,6%	84,4%	74,4%	95,8%
Summations	591	1943	1786	2301

Table 2 shows the percentages of the responses answered correctly on units N°3 and N°4 of the 7th. elementary grade from the school institution N°1.

Both units were divided in subunit 1 and subunit 2, which were denominated as control subunits and experimental subunits in order to have a better comprehension on how the acquisition, improvement, and possible learning of (new) vocabulary was evaluated.

Apart from what has been explained on the previous paragraph, Table 2 shows the final averages and the final summations of the responses answered correctly on units N°3 and N°4 that clarify the difference between subunits where the working methodology did not change and subunits where the implementation of the constructivist strategy of elaborating didactic material namely “Learning by Doing” took place.

Table 3

An Insight on the 3rd. Unit of the 8th. Elementary Grade from the Educational Establishment N°1

School 1		
8 th . Elementary Grade		
Unit N°3		
	Subunit 1	Subunit 2
	Control Subunit	Experimental Subunit
Student		
1	44%	93%
2	19%	64%
3	75%	50%
4	63%	71%
5	69%	93%
6	38%	79%
7	81%	64%

8	69%	93%
9	25%	79%
10	50%	86%
11	63%	79%
12	50%	93%
13	50%	79%
14	63%	93%
15	75%	64%
Averages	55,6%	78,6%
Summations	834	1180

Table 3 shows the percentages of the responses answered correctly on unit N°3 of the 8th. elementary grade from the school institution N°1.

Unit N°3 was divided in subunit 1 and subunit 2, which were denominated as control subunit and experimental subunit in order to have a better comprehension on how the acquisition, improvement, and possible learning of (new) vocabulary was evaluated.

Apart from what has been explained on the previous paragraph, Table 3 shows the final average and the final summation of the responses answered correctly on unit N°3 that clarify the difference between the subunit where the working methodology did not change and the subunit where the implementation of the constructivist strategy of elaborating didactic material namely “Learning by Doing” took place.

Table 4

An Insight on the 2nd. Unit and on the 3rd. Unit of the 7th. Elementary Grade from the Educational Establishment N°2

School 2				
7 th . Elementary Grade				
Student	Unit N°2		Unit N°3	
	Subunit 1	Subunit 2	Subunit 1	Subunit 2
	Control Subunit	Experimental Subunit	Control Subunit	Experimental Subunit
1	43%	88%	51%	38%
2	54%	96%	49%	33%
3	11%	92%	42%	19%
4	77%	100%	80%	52%
5	11%	4%	33%	10%
6	74%	100%	87%	71%
7	29%	85%	40%	24%

8	74%	96%	71%	57%
9	51%	96%	71%	33%
10	20%	88%	47%	24%
11	74%	88%	82%	48%
12	77%	92%	80%	57%
13	51%	96%	62%	38%
14	43%	85%	71%	29%
15	31%	96%	64%	38%
16	80%	69%	71%	24%
17	11%	77%	56%	52%
18	17%	85%	49%	10%
19	69%	100%	64%	14%
20	46%	81%	51%	43%
21	20%	88%	38%	24%
22	49%	96%	78%	19%
23	49%	77%	62%	43%

24	46%	96%	62%	33%
25	51%	92%	76%	33%
26	34%	96%	71%	52%
27	63%	88%	44%	29%
28	23%	96%	71%	38%
29	71%	100%		
Averages	45,0%	88,0%	62,0%	35,0%
Summations	1351	2546	1724	986

Table 4 shows the percentages of the responses answered correctly on units N°2 and N°3 of the 7th. elementary grade from the school institution N°2.

Both units were divided in subunit 1 and subunit 2, which were denominated as control subunits and experimental subunits in order to have a better comprehension on how the acquisition, improvement, and possible learning of (new) vocabulary was evaluated.

Apart from what has been explained on the previous paragraph, Table 4 shows the final averages and the final summations of the responses answered correctly on units N°2 and N°3 that clarify the difference between subunits where the working methodology did not change and subunits where the implementation of the constructivist strategy of elaborating didactic material namely “Learning by Doing” took place.

Table 5

An Insight on the 2nd. Unit and on the 3rd. Unit of the 2nd. Senior Year from the Educational Establishment N°2

School 2				
2 nd . Senior Year				
Student	Unit N°2		Unit N°3	
	Subunit 1	Subunit 2	Subunit 1	Subunit 2
	Control Subunit	Experimental Subunit	Control Subunit	Experimental Subunit
1	85%	69%	47%	100%
2	100%	88%	100%	100%
3	95%	92%	100%	95%
4	60%	47%	50%	32%
5	90%	100%	60%	91%
6	100%	77%	50%	91%
7	90%	95%	87%	95%

8	95%	77%	100%	86%
9	100%	97%	63%	5%
10	100%	97%	100%	95%
11	95%	68%	100%	77%
12	95%	95%	97%	95%
13	95%	0%	100%	95%
14	95%	82%	100%	86%
15	90%	76%	47%	95%
16	80%	74%	100%	95%
17	100%	88%	40%	95%
18	95%	96%	80%	59%
19	95%	79%	100%	91%
20	100%	82%	100%	100%
21			100%	95%
22			73%	95%
23			77%	95%

24			100%	100%
25			73%	82%
26			73%	86%
Averages	93,0%	83,0%	81,0%	86,0%
Summations	1855	1582	2117	2236

Table 5 shows the percentages of the responses answered correctly on units N°2 and N°3 of the 2nd. Senior year from the school institution N°2.

Both units were divided in subunit 1 and subunit 2, which were denominated as control subunits and experimental subunits in order to have a better comprehension on how the acquisition, improvement, and possible learning of (new) vocabulary was evaluated.

Apart from what has been explained on the previous paragraph, Table 5 shows the final averages and the final summations of the responses answered correctly on units N°2 and N°3 that clarify the difference between subunits where the working methodology did not change and subunits where the implementation of the constructivist strategy of elaborating didactic material namely “Learning by Doing” took place.

Table 6

An Insight on the 3rd. Unit and on the 4th. Unit of the 6th. Primary Grade from the Educational Establishment N°1

School 1						
6 th . Primary Grade						
Student	Unit N°3			Unit N°4		
	Subunit 1	Subunit 2	Diff.	Subunit 1	Subunit 2	Diff.
Control Subunit	Experimental Subunit	Control Subunit		Experimental Subunit		
1	57%	93%	36	40%	57%	17
2	36%	53%	17	50%	50%	0
3	43%	100%	57	30%	71%	41
4	79%	93%	14	50%	50%	0
5	64%	60%	-4	20%	71%	51
6	93%	100%	7	60%	71%	11

7	21%	80%	59	50%	57%	7
8	50%	53%	3	80%	57%	-23
9	57%	60%	3	20%	57%	37
10	43%	80%	37	70%	57%	-13
11	43%	67%	24	10%	57%	47
12	43%	67%	24	10%	29%	19
13	50%	60%	10	70%	71%	1
14	64%	80%	16	50%	71%	21
15	93%	93%	0	40%	71%	31
16	86%	93%	7	60%	71%	11
17	36%	87%	51	30%	43%	13
18	50%	87%	37	70%	36%	-34
19	71%	33%	-38	30%	57%	27
20	50%	53%	3	50%	57%	7
21	71%	100%	29	100%	50%	-50
22	36%	60%	24	30%	50%	20

23	43%	15%	-28	
Averages of				
the			16,8	10,9
Difference				

Table 6 shows the percentages of the responses answered correctly on units N°3 and N°4 of the 6th. primary grade from the school institution N°1.

Both units were divided in subunit 1 and subunit 2, which were denominated as control subunits and experimental subunits in order to have a better comprehension on how the acquisition, improvement, and possible learning of (new) vocabulary was evaluated.

Apart from what has been explained on the previous paragraph, Table 6 shows the difference between control subunits and experimental subunits of units N°3 and N°4, respectively.

Furthermore, it is shown on Table 6 the final averages of the difference between subunit 1 and subunit 2 of units N°3 and N°4 that points out the generalization that could be made about the effectiveness of the constructivist strategy of

elaborating didactic material namely “Learning by Doing” to educational establishments that possess equal or similar characteristics to the schools where the strategy previously mentioned took place.

Table 7

An Insight on the 3rd. Unit and on the 4th. Unit of the 7th. Elementary Grade from the Educational Establishment N°1

School 1						
7 th . Primary Grade						
Student	Unit N°3			Unit N°4		
	Subunit 1	Subunit 2	Diff.	Subunit 1	Subunit 2	Diff.
Control Subunit	Experimental Subunit	Control Subunit		Experimental Subunit		
1	94%	18%	-76	100%	100%	0
2	6%	85%	79	57%	100%	43
3	19%	100%	81	57%	100%	43
4	25%	100%	75	100%	100%	0
5	19%	90%	71	86%	93%	7
6	19%	90%	71	86%	93%	7

7	38%	100%	62	86%	93%	7
8	44%	90%	46	57%	100%	43
9	31%	90%	59	86%	100%	14
10	13%	10%	-3	50%	100%	50
11	38%	95%	57	93%	100%	7
12	25%	95%	70	79%	100%	21
13	25%	95%	70	100%	93%	-7
14	13%	95%	82	64%	86%	22
15	19%	90%	71	71%	100%	29
16	13%	70%	57	50%	71%	21
17	25%	95%	70	79%	100%	21
18	19%	85%	66	57%	93%	36
19	6%	95%	89	50%	93%	43
20	6%	70%	64	71%	100%	29
21	25%	90%	65	64%	93%	29
22	31%	95%	64	64%	100%	36

23	38%	100%	62	93%	100%	7
24				86%	93%	7
Averages of						
the			58,7			21,4
Difference						

Table 7 shows the percentages of the responses answered correctly on units N°3 and N° of the 7th. elementary grade from the school institution N°1.

Both units were divided in subunit 1 and subunit 2, which were denominated as control subunits and experimental subunits in order to have a better comprehension on how the acquisition, improvement, and possible learning of (new) vocabulary was evaluated.

Apart from what has been explained on the previous paragraph, Table 7 shows the difference between control subunits and experimental subunits of units N°3 and N°4, respectively.

Furthermore, it is shown on Table 7 the final averages of the difference between subunit 1 and subunit 2 of units N°3 and N°4 that points out the generalization that could be made about the effectiveness of the constructivist strategy of

elaborating didactic material namely “Learning by Doing” to educational establishments that possess equal or similar characteristics to the schools where the strategy previously mentioned took place.

Table 8

An Insight on the 3rd. Unit of the 8th. Elementary Grade from the Educational Establishment N°1

School 1			
8 th . Elementary Grade			
Unit N°3			
	Subunit 1	Subunit 2	
	Control Subunit	Experimental Subunit	
Student			Diff.
1	44%	93%	49
2	19%	64%	45
3	75%	50%	-25
4	63%	71%	8
5	69%	93%	24
6	38%	79%	41
7	81%	64%	-17

8	69%	93%	24
9	25%	79%	54
10	50%	86%	36
11	63%	79%	16
12	50%	93%	43
13	50%	79%	29
14	63%	93%	30
15	75%	64%	-11

Average of

the

23,0

Difference

Table 8 shows the percentages of the responses answered correctly on unit N°3 of the 8th. elementary grade from the school institution N°1.

Unit N°3 divided in subunit 1 and subunit 2, which were denominated as control subunit and experimental subunit in order to have a better comprehension on how the acquisition, improvement, and possible learning of (new) vocabulary was evaluated.

Apart from what has been explained on the previous paragraph, Table 8 shows the difference between the control subunit and the experimental subunit of unit N°3.

Furthermore, it is shown on Table 8 the final average of the difference between subunit 1 and subunit 2 of unit N°3 that points out the generalization that could be made about the effectiveness of the constructivist strategy of elaborating didactic material namely “Learning by Doing” to educational establishments that possess equal or similar characteristics to the schools where the strategy previously mentioned took place.

Table 9

An Insight on the 2nd. Unit and on the 3rd. Unit of the 7th. Elementary Grade from the Educational Establishment N°2

School 2						
7 th . Elementary Grade						
Student	Unit N°2			Unit N°3		
	Subunit 1 Control Subunit	Subunit 2 Experimental Subunit	Diff.	Subunit 1 Control Subunit	Subunit 2 Experimental Subunit	Diff.
1	43%	88%	46	51%	38%	-13
2	54%	96%	42	49%	33%	-16
3	11%	92%	81	42%	19%	-23
4	77%	100%	23	80%	52%	-28
5	11%	4%	-8	33%	10%	-24
6	74%	100%	26	87%	71%	-15

7	29%	85%	56	40%	24%	-16
8	74%	96%	22	71%	57%	-14
9	51%	96%	45	71%	33%	-38
10	20%	88%	68	47%	24%	-23
11	74%	88%	14	82%	48%	-35
12	77%	92%	15	80%	57%	-23
13	51%	96%	45	62%	38%	-24
14	43%	85%	42	71%	29%	-43
15	31%	96%	65	64%	38%	-26
16	80%	69%	-11	71%	24%	-47
17	11%	77%	65	56%	52%	-4
18	17%	85%	67	49%	10%	-39
19	69%	100%	31	64%	14%	-50
20	46%	81%	35	51%	43%	-8
21	20%	88%	68	38%	24%	-14
22	49%	96%	48	78%	19%	-59

23	49%	77%	28	62%	43%	-19
24	46%	96%	50	62%	33%	-29
25	51%	92%	41	76%	33%	-42
26	34%	96%	62	71%	52%	-19
27	63%	88%	26	44%	29%	-16
28	23%	96%	73	71%	38%	-33
29	71%	100%	29			

Averages of

the

41%

-26%

Difference

Table 9 shows the percentages of the responses answered correctly on units N°2 and N°3 of the 7th. elementary grade from the school institution N°2.

Both units were divided in subunit 1 and subunit 2, which were denominated as control subunits and experimental subunits in order to have a better comprehension on how the acquisition, improvement, and possible learning of (new) vocabulary was evaluated.

Apart from what has been explained on the previous paragraph, Table 9 shows the difference between control subunits and experimental subunits of units N°2 and N°3, respectively.

Furthermore, it is shown on Table 9 the final averages of the difference between subunit 1 and subunit 2 of units N°2 and N°3 that points out the generalization that could be made about the effectiveness of the constructivist strategy of elaborating didactic material namely “Learning by Doing” to educational establishments that possess equal or similar characteristics to the schools where the strategy previously mentioned took place.

Table 10

An Insight on the 2nd. Unit and on the 3rd. Unit of the 2nd. Senior Year from the Educational Establishment N°2

School 2						
2 nd . Senior Year						
Student	Unit N°2			Unit N°3		
	Subunit 1 Control Subunit	Subunit 2 Experimental Subunit	Diff.	Subunit 1 Control Subunit	Subunit 2 Experimental Subunit	Diff.
1	85%	69%	-16	47%	100%	53
2	100%	88%	-12	100%	100%	0
3	95%	92%	-3	100%	95%	-5
4	60%	47%	-13	50%	32%	-18
5	90%	100%	10	60%	91%	31
6	100%	77%	-23	50%	91%	41

7	90%	95%	5	87%	95%	9
8	95%	77%	-18	100%	86%	-14
9	100%	97%	-3	63%	5%	-59
10	100%	97%	-3	100%	95%	-5
11	95%	68%	-27	100%	77%	-23
12	95%	95%	0	97%	95%	-1
13	95%	0%	-95	100%	95%	-5
14	95%	82%	-13	100%	86%	-14
15	90%	76%	-14	47%	95%	49
16	80%	74%	-6	100%	95%	-5
17	100%	88%	-12	40%	95%	55
18	95%	96%	1	80%	59%	-21
19	95%	79%	-16	100%	91%	-9
20	100%	82%	-18	100%	100%	0
21				100%	95%	-5
22				73%	95%	22

23	77%	95%	19
24	100%	100%	0
25	73%	82%	8
26	73%	86%	13

Averages of

the

-14

4

Difference

Table 10 shows the percentages of the responses answered correctly on units N°2 and N°3 of the 2nd. senior year from the school institution N°2.

Both units were divided in subunit 1 and subunit 2, which were denominated as control subunits and experimental subunits in order to have a better comprehension on how the acquisition, improvement, and possible learning of (new) vocabulary was evaluated.

Apart from what has been explained on the previous paragraph, Table 10 shows the difference between control subunits and experimental subunits of units N°2 and N°3, respectively.

Furthermore, it is shown on Table 10 the final averages of the difference between subunit 1 and subunit 2 of units N°2 and N°3 that points out the generalization that could be made about the effectiveness of the constructivist strategy of elaborating didactic material namely “Learning by Doing” to educational establishments that possess equal or similar characteristics to the schools where the strategy previously mentioned took place.

Table 11

An Insight on the 3rd. Unit and the 4th. Unit Statistical Calculus and the Statistical Values of the 6th. Primary Grade from the Educational Establishment N°1

School 1			
6 th . Primary Grade			
Statistical Calculus and Statistical Values of Unit N°3		Statistical Calculus and Statistical Values of Unit N°4	
MEAN	16,87	MEAN	10,95
STD	23,93	STD	25,13
SQROOT	4,80	SQROOT	4,69
SE	4,99	SE	5,36
T	3,38	T	2,04
DF	22	DF	21
Expected Value		Expected Value	
from the “T-Student” Table	1,71	from the “T-Student” Table	1,72

Table 11 shows the statistical calculus and statistical values that were used to obtain the “T” value, which represents from what value the constructivist strategy of elaborating didactic material denominated “Learning by Doing” demonstrate and proves its effectiveness.

It is important to mention that the degrees of freedom shown on Table 11 correspond to the total amount of subjects who had the necessary characteristics to participate on this thesis study. Moreover, they respond to the formula “ $N - 1$ ” where the “ N ” value means the total amount of participating subjects of the 6th. primary grade from school 1 on this thesis study.

Notwithstanding, the “ T ” values given by the statistical calculus previously made by the researchers were contrasted with the “ $T - Student$ ” table attached to the appendixes of this thesis study.

Table 12

An Insight on the 3rd. Unit and the 4th. Unit Statistical Calculus and the Statistical Values of the 7th. Elementary Grade from the Educational Establishment N°1

School 1			
7 th . Elementary Grade			
Statistical Calculus and Statistical Values of Unit N°3		Statistical Calculus and Statistical Values of Unit N°4	
MEAN	58,78	MEAN	21,46
STD	34,21	STD	16.56
SQROOT	4,79	SQROOT	4,90
SE	7,14	SE	3,38
T	8,24	T	6,35
DF	22	DF	23
Expected Value		Expected Value	
from the “T-Student” Table	1,72	from the “T-Student” Table	1,71

Table 12 shows the statistical calculus and statistical values that were used to obtain the “T” value, which represents from what value the constructivist strategy of elaborating didactic material denominated “Learning by Doing” demonstrate and proves its effectiveness.

It is important to mention that the degrees of freedom shown on Table 12 correspond to the total amount of subjects who had the necessary characteristics to participate on this thesis study. Moreover, they respond to the formula “ $N - 1$ ”, where the “ N ” value means the total amount of participating subjects of the 7th. elementary grade from school 1 on this thesis study.

Notwithstanding, the “ T ” values given by the statistical calculus previously made by the researchers were contrasted with the “ $T - Student$ ” table attached to the appendixes of this thesis study.

Table 13

An Insight on the 3rd. Unit Statistical Calculus and the Statistical Values of the 8th. Elementary Grade from the Educational Establishment N°1

School 1	
8 th . Elementary Grade	
Statistical Calculus and Statistical Values of Unit N°3	
MEAN	23,07
STD	24,55
SQROOT	3,87
SE	6,34
T	3,64
DF	22
Expected Value	
from the “T-Student” Table	1,71

Table 13 shows the statistical calculus and statistical values that were used to obtain the “T” value, which represents from what value the constructivist strategy of elaborating didactic material denominated “Learning by Doing” demonstrate and proves its effectiveness.

It is important to mention that the degrees of freedom shown on Table 13 correspond to the total amount of subjects who had the necessary characteristics to participate on this thesis study. Moreover, they respond to the formula " $N - 1$ ", where the " N " value means the total amount of participating subjects of the 8th. elementary grade from school 1 on this thesis study.

Notwithstanding, the " T " values given by the statistical calculus previously made by the researchers were contrasted with the " $T - Student$ " table attached to the appendixes of this thesis study.

Table 14

An Insight on the 2nd. Unit and on the 3rd. Unit Statistical Calculus and the Statistical Values of the 7th. Elementary Grade from the Educational Establishment N°2

School 2			
7 th . Elementary Grade			
Statistical Calculus and Statistical Values of Unit N°2		Statistical Calculus and Statistical Values of Unit N°3	
MEAN	41,0	MEAN	-26,0
STD	23,0	STD	14,0
SQROOT	5,0	SQROOT	5,0
SE	4,0	SE	3,0
T	10,0	T	-10,0
DF	28	DF	27
Expected Value		Expected Value	
from the “T-Student” Table	1,70	from the “T-Student” Table	1,70

Table 14 shows the statistical calculus and statistical values that were used to obtain the “T” value, which represents from what value the constructivist strategy of elaborating didactic material denominated “Learning by Doing” demonstrate and proves its effectiveness.

It is important to mention that the degrees of freedom shown on Table 14 correspond to the total amount of subjects who had the necessary characteristics to participate on this thesis study. Moreover, they respond to the formula “ $N - 1$ ”, where the “ N ” value means the total amount of participating subjects of the 7th. elementary grade from school 2 on this thesis study.

Notwithstanding, the “ T ” values given by the statistical calculus previously made by the researchers were contrasted with the “ $T - Student$ ” table attached to the appendixes of this thesis study.

Table 15

An Insight on the 2nd. Unit and on the 3rd. Unit Statistical Calculus and the Statistical Values of the 2nd. Senior Year from the Educational Establishment N°2

School 2			
2 nd . Senior Year			
Statistical Calculus and Statistical Values of Unit N°2		Statistical Calculus and Statistical Values of Unit N°3	
MEAN	-14,0	MEAN	4,0
STD	21,0	STD	26,0
SQROOT	4,0	SQROOT	5,0
SE	5,0	SE	5,0
T	-3,0	T	1,0
DF	19	DF	27
Expected Value		Expected Value	
from the “T-Student” Table	1,72	from the “T-Student” Table	1,70

Table 15 shows the statistical calculus and statistical values that were used to obtain the “T” value, which represents from what value the constructivist strategy of elaborating didactic material denominated “Learning by Doing” demonstrate and proves its effectiveness.

It is important to mention that the degrees of freedom shown on Table 15 correspond to the total amount of subjects who had the necessary characteristics to participate on this thesis study. Moreover, they respond to the formula " $N - 1$ ", where the "N" value means the total amount of participating subjects of the 2nd. Senior year from school 2 on this thesis study.

Notwithstanding, the "T" values given by the statistical calculus previously made by the researchers were contrasted with the "T - Student" table attached to the appendixes of this thesis study.