UNIVERSIDAD DE GUAYAQUIL
FACULTAD DE FILOSOFÍA, LETRAS Y CIENCIAS DE LA EDUCACIÓN

ESCUELA DE Lenguas y lingüística

PROYECTO EDUCATIVO

TOPIC

THE USE OF LOGICAL REASONING IN THE STRENGTHENING OF THE READING SKILL

PROPOSAL

DESIGN OF A GUIDE WITH NUMERICAL REASONING EXERCISES

EDUCATIONAL PROJECT PREVIOUS THE OBTAINING OF BACHELOR DEGREE IN THE ENGLISH LANGUAGE.

AUTORES
Ronald Córdova and Joel Velastegui

CONSULTOR ACADÉMICO
Doctor Eduardo Torres Vivar

2016
DIRECTIVOS

Msc. Silvia Moy-Sang Castro
DECANA

Msc. Wilson Romero
SUB-DECANO

Msc. Alfonso Sánchez Ávila
DIRECTOR
Master

Silvia Moy-Sang Castro
Decana Facultad de Filosofía
Letras y Ciencias de la Educación

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En virtud de la resolución por la autoridad Académica de la Facultad de Filosofía, de septiembre 18 del 2015, en el cual se me designó Asesor de Proyectos Educativos de la Licenciatura en Ciencias de la Educación, especialización Lenguas y Lingüísticas. Tengo a bien informar:

Que los integrantes JOEL JHONATAN VELATEGUI PONCE C.C: 0931241970 con RONALD IVAN CORDOVA LAPO C.C: 0915750020 estudiantes egresados, diseñaron el proyecto educativo con el tema: “THE USE OF LOGICAL REASONING IN THE STRENGTHENING OF THE READING SKILL.”. Propuesta: DESIGN OF DIDACTIC GUIDE WITH LOGICAL REASONING EXERCISES, el mismo que ha cumplido con las directrices y recomendaciones dadas por el suscrito.

Los participantes satisfactoriamente han ejecutado las diferentes etapas constitutivas del proyecto, por lo expuesto se procede a la APROBACIÓN y pone a vuestra consideración el informe de rigor para los efectos legales correspondientes.

Atentamente

[Signature]

Dr. Vicente Torres Vivar
ESCUELA DE LENGUAS DE LA
UNIVERSIDAD DE GUAYAQUIL

Doctor Eduardo Torres Vivar
Tutor
DEDICATION

We dedicate our thesis work to our family and many friends. A special feeling of gratitude to our parents, whose words of encouragement and push for tenacity ring in ours ears. We also dedicate this one to our siblings and our friend and advisor.
THANKFULNESS

We would like to express our sincere gratitude to our thesis advisor, Doctor Eduardo Torres Vivar who has consistently inspired us in this study and provided us precious suggestions and advice. Without his attentive guidance, endless patience and encouragement, this thesis would not have been possible to accomplish. Besides, we have also acquired valuable insights through his instructions, not only in academic studies but also enthusiasm and vigor in life.
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FIJICA DE REGISTRO DE TESIS

TÍTULO Y SUBTÍTULO: EL USO DE RAZONAMIENTO LOGICO PARA FORTALECER LA HABILIDAD LECTORA, PROPUESTA: DISEÑO DE UNA GUÍA CON EJERCICIOS DE RAZONAMIENTO NUMÉRICO

AUTORES: Ronald Córdova Lapo y Joel Velastegui Ponce

TUTOR: Dr. Eduardo Torres Vivar

INSTITUCIÓN: UNIVERSIDAD DE GUAYAQUIL

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TÍTULO OBTENIDO: Licenciatura en Lenguas y Lingüística

AREAS TEMÁTICAS: (Guía de Métodos pedagógicos para coordinar el proceso enseñanza – aprendizaje y permitir desarrollar nuestra propuesta de manera que sea factible para el beneficio de los y las estudiantes).

PALABRAS CLAVE: Comprensión Lectora, Razonamiento, Ejercicios Matemáticos con Texto, Recurso, Estrategia, Pensamiento

RESUMEN: En esta tesis fue investigado cómo el uso de razonamiento lógico influye en el fortalecimiento de la habilidad lectora de los estudiantes de Décimo grado del Colegio físico "Cesar Borja Lavayen". La idea de usar ejercicios de razonamiento numérico nació porque algunos proyectos usan textos literarios, sin embargo, se ha omitido el uso de problemas matemáticos con texto dirigidos a desarrollar la habilidad lectora, quizás porque los profesores de inglés en colegios públicos no enseñan matemáticas y miran a esto como algo difícil de hacer con sus estudiantes en clase. Al contrario, el uso de este recurso ayuda a ganar vocabulario, aprender a entender textos o desarrollar comprensión lectora, mejora la producción escrita y desarrollar pensamiento crítico, además esto es una forma de implementar el uso de matemáticas con inglés en colegios públicos donde esto no es posible usar hasta ahora como una asignatura cumpliendo y aplicando el eje transversal curricular. Como una recomendación de este estudio sería buena idea mantener este tipo de estrategia dentro de los planes de lección y mantener los ejercicios de razonamiento numérico enfocados en el fortalecimiento de la habilidad lectora.

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**TITLE AND SUBTITLE:** THE USE OF LOGICAL REASONING IN THE STRENGTHENING OF THE READING SKILL; PROPOSAL: DESIGN OF A GUIDE WITH NUMERICAL REASONING EXERCISES

**AUTHORS:** Ronald Córdova Lapo y Joel Velastegui Ponce

**TUTOR:** Dr. Eduardo Torres Vivar

**INSTITUTION:** UNIVERSITY OF GUAYAQUIL

**FACULTY:** Philosophy, Letters and Education sciences

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**TEMATIC AREAS:** (Guide of pedagogical methods to coordinate teaching and learning process and let to develop our proposal so that it be feasible for benefit of the students).

**KEYWORDS:** Reading Comprehension, Reasoning, Word Problems, Resource, Strategy, Critical Thinking

**ABSTRACT:** In this thesis was researched, how does the use of logical reasoning influence in the strengthening of the reading skill in tenth grade students? At “Cesar Borja Lavayen” public school the idea of using numerical reasoning exercises was born because many projects relate reading only with literacy however it has been omitted the use of word problems for being implemented as other reading strategy perhaps because teachers that not teach math in English in public schools and look at this as something difficult to do with their students in class. On the contrary, the use of this resource help students to gain vocabulary, learn to understand a text ;( reading comprehension), improve written production and develop critical thinking, as well as it is a way to implement math with English language in public school where it is not possible to use so far as a subject carrying out and applying the cross-curricular approach. As a recommendation of this study, it would be a good idea to keep this type of strategy into lesson plans and keep word problems or numerical reasoning focused on the strengthening of the reading skill.

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**AUTHOR CONTACT:**

Ronald Córdova Lapo
Joel Velastegui Ponce

**PHONE NUMBER:** 0998898892

**E-mail:** ronaldlapo24@gmail.com
joreigt@hotmail.com

**INSTITUTION CONTACT:**

Nombre: secretaría de la escuela de lenguas lingüística

Teléfono: (04)2294888Ext.123

E-mail: lenguas.linguistica.filob@gmail.com
ABSTRACT

In this thesis was researched, how does the use of logical reasoning influence in the strengthening of the reading skill in tenth grade students? At “Cesar Borja Lavayen” public school The idea of using numerical reasoning exercises was born because many projects relate reading only with literacy however it has been omitted the use of word problems for being implemented as other reading strategy perhaps because teachers that not teach math in English in public schools and look at this as something difficult to do with their students in class, in contrary, the use of this resource helps students to gain vocabulary, learn to understand a text; (reading comprehension), improve written production and develop critical thinking, as well as it is a way to implement math with English language in public school where it is not possible to use so far as a subject, carrying out and applying the cross-curricular approach. As a recommendation of this study, it would be a good idea to keep this type of strategy into lesson plans and keep word problems or numerical reasoning focused on the strengthening of the reading skill.

KEYWORDS: Reading Comprehension, Reasoning, Word Problems, Resource, Strategy, Critical Thinking
En esta tesis se investigó, ¿cómo influye el uso del razonamiento lógico en el fortalecimiento de la capacidad de lectura en los estudiantes de décimo grado?

En la escuela pública "Cesar Borja Lavayen" nació la idea de utilizar ejercicios de razonamiento numérico porque muchos proyectos se relacionan con la lectura solo con alfabetización, sin embargo se ha omitido el uso de problemas planteados para implementar como otra estrategia de lectura quizás porque los maestros no enseñan matemáticas en Inglés en las escuelas públicas y vean esto como algo difícil de hacer con sus estudiantes en clase, por el contrario, el uso de este recurso ayuda a los estudiantes a ganar vocabulario, aprender a entender un texto (comprensión de lectura), mejorar la producción escrita y desarrollar críticas pensar, así como también es una forma de implementar las matemáticas con el idioma inglés en las escuelas públicas donde no es posible usarlas en cuanto a una asignatura, llevando a cabo y aplicando el enfoque intercurricular. Como recomendación de este estudio, sería una buena idea mantener este tipo de estrategia en los planes de las lecciones y mantener los problemas planteados o el razonamiento numérico enfocados en el fortalecimiento de la habilidad lectora.

PALABRAS CLAVE: Comprensión de lectura, razonamiento, problemas de palabras, recursos, estrategia, pensamiento crítico
INTRODUCTION

The aim of this project is to give support to the English teaching and learning processes by providing a set of methodological suggestions to apply teaching method and techniques in the communicative language and apply contents in other subject in public schools, as well as through this project it is possible determine the influence of the use of logical reasoning in the strengthening of the reading skill through bibliography, analysis field study, survey, and statistics analyses for designing a didactic guide with logic reasoning exercises.

In some public schools it is observed that the English reading skill in students’ performance is low, if it is compared with one in private school, precisely it was determined that the conflict situation according the investigation of the 10th grade at “Cesar Borja Lavayen“ school of Guayaquil city show that students have many difficulties to understand texts in English, as well as, there is an insufficiency in apply reading methodologies and strategies and it is believed that implement a new didactic resources would help students to understand a text in better way.

It was very important to employ empirical, exploratory and descriptive investigation, as well as it was necessary to use some methods to get value information useful to implement a methodological strategy to strengthen the teaching and learning of reading skill and raise the quality of it in public schools it will be used a cross-curricular approach in the proposal.

This work has been developed in four chapters and they all show theoretical bases, objectives, methodology, and instruments of investigation that have given support it.
The Chapter I: the problem is made of the Problem Statement, located of the problem, conflict situation and causes of the problem, the formulation and evaluation of the problem, general and specific objectives, justification and importance.

The Chapter II: the framework corresponds to the antecedent of investigation, foundations, definitions, classifications and importance.

The Chapter III: Methodology is made of the design of investigation, types of research, techniques and instruments of research, variable matrix, data analyses, recommendations and conclusions.

The Chapter IV: The proposal is made of the background of proposal, justification of proposal, definitions and importance, diagnostic, instruction for application of the proposal, methodological instructions, and pedagogical, sociological, psychological, philosophical, legal aspects, conclusion and bibliography.
CHAPTER I

THE PROBLEM

CONTEXT OF THE INVESTIGATION

In Guayaquil there are many public schools where most of them have the names from the most important people in our nation. “Cesar Borja Lavayen was an intellectual man and he was a Doctor, Writer and Politic man who worked for his society. In 1900 after being expelled from the country, he came back again, but this time he was in charge of Central University as a principal after that he was external relationship ministry and ministry of lands.

This public school has its name in honor to him, it has 2100 students between men and women of which most of them belong to the lower middle class and lower class, the educational service is accepted by students´ mothers and fathers and local authorities. It is located in Eloy Alfaro Avenue, Parroquia Pedro Carbo in the south-center of the city.

“Cesar Borja Lavayen” public school has its own building with three floors. Its infrastructure has: 2 backgrounds, 1 chemistry laboratory, 2 computer laboratories, medical department, 1 audio - visual library, bar, principal department, vice-principal department, treasure office, secretary department, play and sports department, and psychological counseling department.

Teachers all are 68 in total with two sections, the public school is currently working in the morning, afternoon and night shifts; in the morning teachers are 26, in the afternoon teachers are 27 and at night teachers are 15 in total. Stewardship department is made up by principal, two vice-principals and one general supervisor
Today’s vision of the authorities and teachers is to reach an academic and moral excellence and to engage students to a valuable social transformation making them critical thinkers that would be able to be competent in today’s globalized world.

PROBLEM OF THE INVESTIGATION

CONFLICT SITUATION

The investigation of the 10th grade at “Cesar Borja Lavayen “public school shows that students have many difficulties to understand texts in English, as well as, there is an insufficiency in apply reading methodologies and strategies.

Many are the strategies used by teachers to improve the reading skill in our students however it was observed that most students even have insufficiency of the reading skill in English because they do not learn well to use the necessary vocabulary according to level to understand text as well as the reading comprehension insufficiency however It is important to say that any strategy is not bad or do not work well, in the teaching-learning process all strategies are good depend on the way or interest teachers give them, teachers should look for new way to teach, it is not necessary to invent anything, improve them is part of our job, if teachers apply well a methodology they will see changes in the way their students make a reading comprehension.

In some public schools it is observed that the reading skill performance in students is low, in consequence it makes that this research can determine many pedagogical causes

It is possible to have some questions about the students’ performance insufficiency in secondary school due to lack of educative plans, motivation and low reading comprehension, all of them are necessaries to learn a foreign language. English Teachers and non-English teachers should always have in
mind to achieve that their students became competent readers because reading is the base of all learning process.

it is believed that implement a new didactic resource would help students to understand a text in better way, whichever they be, if they are used in correct way teacher will have achieved his goals in class, however, this project in spite of not being applied before in Ecuador, it has been applied in other countries with successful results.

**SCIENTIFIC FACT**

One year ago, the authors did their teaching practices in this place and throughout this time they could observed the insufficiency of the reading skill at students of 9th grade of EGB. For this, it was necessary to apply a little diagnostic test for students and interview to the English teacher.

**CAUSES**

Through these previous research methods, it was determined that the causes are the next:

- Insufficiency of didactic resources to improve reading skill.
- Insufficiency in apply reading comprehension activities
- Insufficiency of activities to acquire vocabulary
- Insufficiency in activities to improve critical thinking and logical reasoning
- Insufficiency in connect English languages with other subjects
PROBLEM APPROACH

How does the use of logical reasoning influence in the strengthening of the reading skill through the numerical reasoning exercises in students of 10th grade at “Cesar Borja Lavayen” public school zone 8, district (09024) provincial del Guayas, canton Guayaquil, Parroquia Pedro Carbo, academic year 2016 – 2017

GENERAL OBJECTIVE

✓ To determine the influence of the use of logical reasoning in the strengthening of the reading skill through bibliography analysis field study, survey, and statistics analyses for designing a didactic guide with logic reasoning exercises.

SPECIFIC OBJECTIVES

✓ To describe the use of logical reasoning through a literature review, statistical and field analysis

✓ To characterize the reading skill through bibliographical and statistical analysis, survey to the students and an interview to the English teacher.

✓ To design a guide focused on logical reasoning exercises through the information written in text about how to take advantages from the logic reasoning exercises to increase vocabulary and improve the reading skill

RESEARCH QUESTIONS

1. Is it possible to use logical reasoning to increase and improve reading skill?
2. How would teachers take advantages of the didactic guide with logical reasoning exercises?
3. Are the logical reasoning exercises other way to learn English in class?
4. Would the logical reasoning exercises be considered a ludic activity?
5. What advantages would the high school get from our project?

RATIONALE

In an investigation carried out by EFI, (English proficiency index), (2016) along with EF (English first company), Ecuador is in the 47th, position in the world ranking of the English proficiency among 72 countries, according this investigation. It is recommended to those countries with low level of English proficiency to change or improve some teaching aspects; the recommendations were that English must be taught at an early age with enough numbers of hours in class, English classes should be elaborated with international standards, as well as it is necessary improve the English level in public schools

To improve the English level in public school, it is thought implement a strategy that strengthens the reading skill and help students to improve their performance in English language. For this reason, it has been considered to base this project taking in account the Common European framework, (2010)

“the progress in the teaching-learning process is up to teachers because they are called to monitor the students’ progress in all their language abilities; apply, invent, discover and look for other strategies not only for evaluating students in class but prepare students for the success in the future performance. Teachers should use currently resources to help students to develop and improve their individual learning process” (p.141)

To achieve that reading skill, improve, it will be implemented a method to help students to improve not only the reading skill but critical thinking, written
production and increase vocabulary, as well as to integrate English with other subjects

“Cesar Borja Lavayen” public school is the chosen school to implement the proposal “numerical reasoning exercises” where teachers can adapt little text along with word problems so that they can use it as a cross curricular approach activity and a motivational reading activity.
CHAPTER II

THE THEOREICAL FRAMEWORK

BACKGROUND OF THEORETICAL FRAMEWORK

The research is focused on the knowledge that students present in reading skill at “Cesar Borja Lavayen” public school in tenth grade of basic education and it is going to be explained how the variables is being applied for the thesis purpose.

In the beginning it was necessary to find out if there were some projects referring to the logical reasoning related with reading skill and in fact, it was found two projects that involve or integrate different subjects along with reading skill, the first one deals with how to teach science using English language; (The Thinking Lab project by Cambridge university press), and the second one speaks about mathematics; (RAMP Project by Dr. Kate O’Brien), This project is similar to the purpose of this thesis because it follows the same objective, to strengthen reading skill using numerical reasoning (math), and achieve that mathematics through the numerical reasoning exercises be taught in English language in public schools, too.

For giving support to this research it is necessary to consider different foundations, the followings are applied for the use of logical reasoning in the strengthening of the reading skill.
EPISTEMIOLOGICAL FOUNDATION

Every investigation need to clear concepts up and relate these each other, in the next pages it will be argued what some authors have written about logical, reasoning, reading, vocabulary, critical thinking and numerical reasoning

DEFINITIONS AND IMPORTANCE OF THE LOGICAL REASONING

LOGIC

Sanchez (1978) defines: “logic as a science that studies the thinking structure although it establishes the correct process through which, the reason can avoid the mistake and reach the true” (p.29)

For Sanchez (1978) the only thing to find or reach the true is using the logic, it is who signs or addresses the road of the thinking, the logic is a set of rules to think in correct way and it can be applied to any science. Logic science refers to the study of the reasoning, where “reason” consists in having true reasons which are named conclusions, from others named premises if the premises are true so the conclusions must be also true.

Example

(i) Every Equatorian is Latino-American
(ii) Guayasamin was Equatorian
(iii) Therefore, Guayasamin was Latino-American
LOGICAL

PROCESS

Sanchez (1978) says that “an analyze of the knowledge phenomenon show that it is a process made up of three phases; concept, judge and reasoning” (p.32)

According to Sanchez (1978) It can be mentioned clearly that the reasoning is only one part of the logic or the thinking and the lack of it produces in the human being is an abnormality in his behavior. The reasoning is immersed in all what people think, see, hear, smell, eat and read so that it can be confirmed the relation between the reasoning and the reading skill.

CONCEPT

Oxford dictionary (2014) “It is an idea or mental picture of a group or class of objects formed by combining all their aspects.” (p.1)

According to Oxford dictionary the concept is the idea that human beings have to identify things by its name.

JUDGE

Oxford dictionary (2014) “Judge is the ability to make considerations, decisions or come to sensible conclusions” (p.2)

Following to Oxford dictionary, (2014), judge is an idea which people do and determine if something is correct or incorrect given to it, a conclusion or hypothesis.
REASONING

Kompridis (2010) expresses that “the Reason is the capacity for making sense of things, applying logic, establishing and verifying facts, and changing or justifying practices, institutions, and beliefs based on new or existing information “(p. 271)

Following to the text above, the reasoning is a mental capacity useful to determine if something is true or false, however, to find the correct answer it should have propositions and a set of propositions give place to the arguments when the arguments exist they can be inferred or reasoned.

IMPORTANCE OF LOGICAL REASONING

Bruner et al., (1956) “Reasoning involves going beyond the information to give a more structured and precise understanding.” (p.52)

Thinking about Bruner et al., (1956) it can be explained that Logical reasoning is important for several reasons. Logical reasoning is necessary to make decisions. All human beings use reasoning in all what they think or do, the reasoning is essential to discover things or determine if something is true or false. In the today school’s teachers are learning how to teach using logic reasoning in their students and one of this ways to teach is to achieve students have critical thinking. They can use reasoning from some situations around their, such us: reading an article in the magazine, discuss a theory about science in class, determine if an experimental result is true or false or resolve a reasoning exercise.
TYPES OF REASONING

Logical reasoning has three possibilities of reasoning: verbal, numerical and abstract reasoning. Programs as PISA, INEVAL or SENECYT use logical reasoning in their evaluation tests.

DEDUCTIVE REASONING

Schechter, (2012) expresses that “Deductive reasoning is the kind of reasoning in which, roughly, the truth of the input propositions (the premises) logically guarantees the truth of the output proposition (the conclusion), provided that no mistake has been made in the reasoning.” (p.1)

Considering the foregoing text, it is explained that deductive reasoning is the process of showing that certain statements follow logically from accepted facts. It is necessary at least two premises to find the conclusion, deductive reasoning is a reasoning that goes from general to the particular, Mathematical Logic and Philosophical Logic are commonly associated to this type of reasoning,

Example:

"When It rains, things outside get wet. The grass is outside, therefore: when It rains, the grass gets wet."

INDUCTIVE REASONING

According to Kendall Hunt Publishing, (2008) Inductive reasoning is one form of reasoning that use analogies, example, observations, and experiences to form conclusive propositions. It also uses experiences to formulate statements based on general observations.

VERBAL REASONING

McConkey et al., (2006) mentions “Verbal reasoning is like to think with words.” (p.12)

Verbal reasoning is the capacity to think with verbal content, establishing between them principles of classification, order, relationship and meanings. It is the set of mental activities that consist in the connection of ideas according to certain rules according to the foregoing text.

The verbal reasoning can be applied in different ways;

PROPOSITION

Sanchez, (1978) “Proposition is a sentence that can be true or false and only it can be give judges” (p.69)

Following to Sanchez, (1978) a proposition is a statement that expresses a jugement, opinion or fact about something. A simple statement such as "sharks are dangerous" is one form of proposition

PREMISE

Oxford dictionary, (2014) defines a premise as a “previous statement or proposition from which another is inferred or follows as a conclusion.” (p.3)
According to Oxford dictionary, (2014) a premise is a proposition that will follow or induce a conclusion. For example, a statement such as "John has no car and therefore won't be able to go to work today," has two premises which form the conclusion that John won't be at work.

**SYLLOGISM**

Sanchez, (1978) expresses that “a syllogism is the verbal expression made up of three premises." (p. 81)

The syllogism is an argument that consists of premises in order to arrive to the truth, it is necessary to have two premises to get the third one as it is explained by Sànchez, (1978), For example, "Mary is a woman. All women have hair, therefore Mary has hair".

**VERBAL ANALOGIES**

Sanchez, (1978) explains that “the analogy is the reasoning based on the similarity.” (p.104)

Thinking about the foregoing text, it can be said that analogies are comparaison between two subjects or concepts based on their relations or similar things. An example of a verbal analogy is, "A car is to garage like ship is to shipping dock".

**NUMERICAL REASONING**

From the first civilization human beings have used numbers to organize his life and make commerce between different cultures, the necessity to measure the world have let us use numeracy to solve problems.
Estyn, (2013) defines numeracy as “the ability to apply simple numerical facts, skills and reasoning to real-life problems.” (p.1)

Welsh Government, Education Department (2012) defines numeracy as “identifying and applying numerical reasoning in order to solve a problem, and carrying out the numerical procedures which enable people to work out and show their solutions.” (p.2)

According to Estyn (2013) It can be said that numerical reasoning is the ability to understand, organize and resolve a problem using a mathematical methods and reasoning to real life problems as well as according to the Welsh Government, Education Department (2012) “numeracy is also the ability to compute faster, to think in mathematical terms it include math verbal problems, compute and numerical series. All of this enables people to work and show their solutions” (p.3)

ABSTRACT REASONING

Logsdon (2016) notes “Abstract thinking is the ability to process ideas that involve complex visual or language-based ideas that are not easily associated with concrete ideas. Abstract ideas are often invisible, complex and subjective. Concrete ideas are usually visible and objective.” (Paragraph.1)

A closer look at the data given by Logsdon, (2016) Abstract thinking skills are important in the study of subjects such as math, sciences and social studies. It benefits students in the classroom because they can look for different alternatives to solve something
CONNECTION BETWEEN READING AND MATH

Shanahan (2008) mentions “In reading mathematics text, readers need to analyze and expand meaning rather than condense ideas” (p.45)

Thinking about Shanahan (2008) quotation, it can be mentioned that the students improve their reading skill better than any other text when they use a word problem or numerical reasoning exercise because they have to analyze all what they are reading, and it involves new words, new concepts, and different ways to explain a problem.

Rothstein (2010) notes “Students need to learn how to read mathematics, in the same way they learn how to read a novel or a poem, listen to music, or view a painting” (p.15)

Considering the foregoing text, it is necessary to mention that there are some ways in which mathematics text differs from text in other subjects; mathematics texts contain words as numeric and non-numeric symbols to decode. There may also be graphics that must be understood for the text to make sense; these may sometimes include information that is intended to add to the comprehension of a problem

McGregor and Price, (as it is cited in Fite,2002), remarks “vocabulary, number and symbol sense, as well as the ability to read and comprehend word problems are important factors effecting achievement in math, however they believe the cognitive ability that drives symbol processing is the connection between language and math.” (p.8)

Assuming the foregoing text, it is not correct to think Mathematics is only numbers and symbols, in Mathematic texts is also possible apply reading strategies to understand it, where there is a letter, a word, a phrase or paragraph, there is reading skill
Word problems can also be used to help students for improving their reading skill, increasing their mental concentration, gaining new vocabulary and developing critical thinking.

INTEGRATING READING AND MATH

According to Freitag (2009) “In order to comprehend other disciplines, readers must often develop peculiar reading skills to those disciplines. Students must learn to read mathematically.” (p.17)

Fite (2002) in her work about Reading and Math conclude that “Reading and math require very similar cognitive processing involves the ability to derive meaning (comprehension) from symbols whether they be letters, words, numbers or equations. If the student lacks the ability to process symbols, then he or she cannot read nor can they “do” Math.” (p.11)

According to text above it reading and math are similar in their cognitive processes, for understanding a word problem it is needed the basic steps; the first is to be sure that students can read; second provide them with the skills necessary to solve basic numerical reasoning exercises or word problem, third, increase vocabulary in systematic way class by class.

DEFINITION AND IMPORTANCE OF THE READING SKILL

It is very important give to know the importance and details of this research and speak about each part of its components; especially the dependent variable and independent variable.
COMMUNICATIVES COMPETENCES

For Common European framework, (2010) “the Communicative language competence has several components, skills and characteristics the main components are linguistic, sociolinguistic and pragmatic component they all are activated through the development of the four language skills (reading, writing, speaking and listening). The goal of a language classroom is to point toward all of its components” (p.11)

READING SKILL

For Mikulecky (2008) “to read is to use the mental skills to discover or understand different meaning into the text, however it is not so simple as it seems, because the reader should use some method or strategy for getting a whole understanding and connect ideas with other subjects.” (p.3)

Parodi (1999) says “the text understanding is defined like a mental process with a purpose, where the reader builds an interpretation of textual information, based on the tracks shown into the text and it prior knowledge. To work out an interpretation, the reader uses a set of reading strategies.” (p.93)

According to Parod (1999) Reading is a process that involves both perception and thought or language comprehension and decoding. Reading has two processes: word recognition and comprehension. Word recognition refers to the process of perceiving how written symbols correspond to one’s spoken language while Comprehension is the process of making sense of words, sentences and connected text.

A closer look at the data given by to Parodi (1999), it can be said that there is no other way to acquire knowledge if someone does not learn to decode what numbers, symbols, letters and words represent, perhaps nothing
would work well; speaking and listening, reading and writing complement the ability for which the brain can get a lot of information.

Reading for ESL (2015) mentions “When we learn a language, there are four skills that we need for a complete communication. When someone learns his/her native language, usually learn to listen first, then to speak, then to read, and finally to write (…) Reading is an essential skill for language learners. When reading skill improves, listening, speaking and writing skill improve too.”

The foregoing quote remarks that Reading skill is an essential skill for language learners in public schools. Students where students are not native speakers and their level of English is low because of some reasons between these the insufficiency of methods or strategies to develop reading, it is important remember that if reading skills improve, the rest of skills improve too.

THE IMPORTANCE OF VOCABULARY FOR SUPPORTING READING SKILL

For Graves, (as it is cited in Mukoroli, 2011) “vocabulary is all word that a human being can have in its mind through years, so he can create phrases or ideas giving life to any language. Vocabulary is essential to understand and communicate with others in English and express their own ideas. When someone learn other language have enough vocabulary is the way to get increase the proficiency and fluency.” (p.6)

READING COMPREHENSION

NSW Department of Education and Training (2010) mentions that: “When learners comprehend, they interpret, integrate, critique, infer, analyze, connect and evaluate ideas in texts (…) when comprehension is successful; learners are
left with a sense of satisfaction from having understood the meaning of a text” (p.10)

According to the foregoing extract, it can be assumed that Reading comprehension is making meaning from text and it depends on two important skills; language comprehension and decoding, all what learners read is immediately analyzed but this analyze, imply other mental abilities such us: interpret, integrate, critique, infer and connect. The reading comprehension is a process of interaction between reader and text, it implies to understand the text.

**TYPES OF READING**

According to Brown, (as it is cited in Govea, 2009) “reading can be divided in two types: intensive and extensive reading.” (p.122)

**INTENSIVE READING**

Brown, (as it is cited in Govea, 2009) explains, “Intensive reading is calls attention to grammatical forms, discourse markers, and other surface structure details for understanding literal meaning, implications and rhetorical relationships”. (p.122)

Considering the foregoing text, intensive reading is used to teach or practice specific reading strategies or skills. He draws an analogy to intensive reading as a "zoom lens" strategy where the text is treated as an end in itself. Sometimes called “Narrow Reading”, may involve students reading selections by the same author or several texts about the same topic.
EXTENSIVE READING

Mikulecky (2008) defines “extensive reading as a highly individualized approach to reading improvement. Students select their own books and read at their own pace. (p.3)

To achieve a general understanding of a text, students read large amounts of high interest material, usually out of class, concentrating on meaning. The aims of extensive reading are to build reader confidence and enjoyment. Extensive reading is always done for the comprehension of main ideas, not for specific details. Extensive reading on the other hand, involve reading of large quantities of material directly and fluently.

Marsh, (as it is cited in Richard and Renandya (2007) considers that “The most important aspects in the extensive reading are the quantity and the variety instead of quality from the text” (p.1342)

The foregoing text could be argued that in this type of reading is necessary the huge variety of reading material (genres, topics and sources) with the idea to give freedom to the students so that they can choose what read in consequence students are going to read by pleasure with the intention to gain data or by general comprehension.

READING PROCESS

Solè (as it is cited in Ramos, 2008) mentions “reading comprehension implies develop and work different strategies that correspond to the three reading phases: Pre-reading, while reading and post reading.” (paragraph. 61)

According to Solè (2010) reading process cannot be considered as one action alone it is an action that need a range of steps or phases for giving
meaning to the text. The interaction between reader and text is important to get a huge academic level

PHASES OF READING

According to Barnett (as it is cited in Rosas, 2012) “Phases of reading are: pre-reading, while reading and post – reading” (p.231)

PRE-READING

Following to Rosas (2012) it has found that Pre-reading is a way to prepare a reader prior to a reading assignment by asking them to react to a series of statement, questions, or words related to the content the material. For Barnett (as it is cited in Rosas, 2012) some activities in this phase are: Prediction, Recognize the text structure, Transference, Skimming and Scanning.

WHILE READING

According to Barnett (as it is cited in Rosas, 2012) while reading activities are taught students to extract specific information. Students should scan the text to extract the information which the tasks demand. They do not have to pay attention to the parts of the text they do not understand. Some activities in this phase are: Inference, prior knowledge, consolidation, prediction of content and use of dictionary

POST-READING

According to Barnett (as it is cited in Rosas, 2012) post reading activities concerned with summing up the content of the text, investigation into the writer’s opinion and may entail follow-up-task related to the text. Activities in this
phase are: scanning, skimming, use of textual structure, use of prior knowledge, Prediction, and Inference

READING STRATEGIES

Moore, (2010) mentions that: “Students improve their comprehension performance when they learn to apply strategies.” (p.2)

According to Moore, (2010) a text can be understood if students apply a technique or strategy to make what they are reading something more productive. For Ruddel and Unrau (as it is cited in Schoenbach, 2014)

“When students want to understand a text, students should interact with text so that if students notice they are losing the meaning as they read, they can draw on a variety of strategies to readjust their understanding. Strategies come text with the purposes to guide their reading and responding to the ideas that take shape in the conversation between the text and the self.” (p.38)

McEwan (2010) mentions that:

“To improve students’ reading comprehension, teachers should introduce the seven cognitive strategies of effective readers: to extract and construct meaning from text, to extract and construct meaning from the text, think about how and what one is reading, question generation, question answering clarify misunderstandings, solve problems, gather information, the meaning of text in one's own words and constructing a mental image.” (p. 30)

In conclusion reading comprehension strategies are procedures of high level such as: activating, inferring, monitoring-clarifying, questioning, searching-selecting, summarizing, and visualizing-organizing, therefore it is necessary to
have objectives to carry out, planning of the several situations to get it so that it can be evaluated and changed.

**READING AND WRITTEN PRODUCTION**

According to Govea (2009) students write to show their knowledge about what they read; writing helps students build their reading skills. (p.123)

For Harmer, (as it is cited in Govea, 2009) “one Student develops writing skill if the teacher encourages the continuous practice of it.” (p.123)

The reading skill entails to use at the same time a writing competence in consequence it can be said that while reading is an input activity the writing is an output activity. Basically, reading affects writing and writing affects reading. All English teachers know that reading instruction is most effective when it is used with writing instruction and vice versa. Reading has different genres that helps students learn text structures and language that they can then transfer to their own writing.

In other words, reading give students prior knowledge that they can use in their stories. One of the primary reasons that we read is to learn. Especially while we are still in school, a major portion of what we know comes from the texts we read. Since writing is the act of transmitting knowledge in print, we must have information to share before we can write it. Therefore, reading plays a major role in writing.

**PEDAGOGICAL FOUNDATION**

In this foundation is necessary explain different models that teacher should know before applying reading skill with students in classroom.
COGNITIVE MODELS

Ramos (2008) mentions three types of cognitive models: ascendant model or Bottom up, descendent model or Bottom Down, Interactive model.

ASCEDENT MODEL OR BOTTOM UP

Gough (as it is cited in Ramos, 2008) mention that in this model reader starts reading letters and the whole of these, this process is going to increase up to reader gets understand the rest of unit, words and the overall context. (paragraph. 24)

The model explains that student analyzes text from the simplest element (letters) up to get to the most complex elements as phrases or the whole text. Following to Ramos (2008) in this model there is a relationship between reader and text but give importance to the text but there is a disadvantage with this model, after the reading, teacher does specific questions about text but in this way, it is not achieving the critical thinking of students.

DESCENDENT MODEL OR BOTTOM DOWN

Smith (as it is cited in Ramos, 2008) explains that “this model looks for words or sophisticated phrases after that this model analyzes elements that integrate it “. (paragraph. 34)

This model gives important to the reader who should use cognitive strategies as predict or infer the ideas on the text, it is equal to say that the meaning is not in the text but in the head because it is the head who reads. This model explains that student or reader can analyze the overall idea and divide it in smaller parts. This model is against of ascendant model.
INTERACTIVE METHOD

Carrel and Devil (as it is cited in Ramos, 2008) explain that “reading is an interactive process between reader and text whose individuals look for information to objectives that will guide reading therefore the reader is more active to process the text” (paragraph. 48)

Interactive model sees the reading as a complex and cognitive activity and the reader as an active processor of the information inside the text. Interactive method uses both methods. They can be used join to get a complete understanding about the text. It would be the best method because the reading skill works better when both text and reader achieve the objective of give sense to the written ideas.

SOCIOLOGICAL FOUNDATION

DEVELOPMENT OF ENGLISH TEACHER

It very important to encourage professional Development of English teacher and the improvement of their professional career, however there are not many projects aimed to this objective. The government should implement more programs where teachers can apply different knowledge, diversify the learning, and integrate it, in systematic way starting for the primary public schools because the primary school students will be the next students who the government will give scholarships.

Minister of Education (2016) “strengthen the teaching and learning of English language has as main objective that Ecuadorian students reach a functional level of the English language. Its concrete initiative is addressed to the curriculum updated of this subject, give books with English content, encourage professional Development of English teacher and the improvement of their professional career” (paragraph. 1)
For Minister of Education (2016) it is necessary create a project to show to the way towards to the new way of teaching and learning English however, they are scares the projects aimed to encourage professional development of English teacher one of these is GO TEACHER program, program that until 2014 was opened. There is not quality in education if Government does not encourage the professional development of English teachers in public schools.

On another hand, teacher also have the responsibility to improve their professional profile by themselves; they have to look for different strategies to generate changes in the cognitive process in their students.

PHILOSOPHICAL FOUNDATION

It is important to mention the relation between philosophy and logic. Sanchez (1978) explains: “To live is, must think about existence, and think is, make philosophy” (p.19).

Following the text above, when the human being began thinking, his mind began connecting ideas according his acts, and thank of it, the science emerged, and they continue using logic for making new theories

Sanchez (1978) expresses that every man is a philosopher wants or not, the different between he and the animals is that the man is conscience of his existence. Life demand to the men to think and to know how to live, and live is, have to think, think is, make philosophy. (p.19)

Following to Sanchez (1978) From the first moment that a man birth the action of thinking began to develop, in the first instance when the man is still a child his mind get prepare to make philosophy it means that philosophy involve a mental process, this mental process is named logic and when man starts to think whether his actions are good or bad, determine whether what he thinks is
correct or incorrect, true or false and when he has found the answer through the reasoning, the science opens doors to the new knowledge.

CRITICAL THINKING

Paul and Elder (2001) “Critical thinking is that mode of thinking about any subject, content, or problem in which the thinker improves the quality of his or her thinking by skillfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them” (paragraph 1)

According to Paul and Elder (2001) it can be mentioned that critical thinking is to use mental strategies to achieve a deeper knowledge about any subject, content or problem. This deeper knowledge is explained by Ennis, (as it is cited in Gorzycki, 2015) who describes fourteen critical thinking capacities:


PSYCHOLOGICAL FOUNDATION

MULTIPLY INTELLIGENCES

Gardner (1983) suggested that “all people have different kinds of intelligences” (p. 30). For Gardner (1983) there are eight intelligences where he explains that people do not have just an intellectual capacity, but have many intelligences including musical, interpersonal, spatial-visual and linguistic intelligences, in other words each person has an individual mental ability for example there are people strong in verbal, musical and naturalistic intelligence
and most teachers have begun to teach approaching in this empirical theory. To use the multiply intelligences theory supplies a framework to support teaching and a language.

According to Gardner (1983) multiply intelligences are divided in:

**VISUAL-SPATIAL INTELLIGENCE**

Garner (2006) “Spatial intelligence is the capacity to form spatial representations or images in one’s mind and so operate upon them variously “(p.34)

From the foregoing text it is mentioned that People who are strong in visual-spatial intelligence are good a visualizing thing. These individuals are often good with directions, maps, charts, videos and pictures.

**LINGUISTIC-VERBAL INTELLIGENCE**

Garner (2006) “Linguistic intelligence entails facility in the use of spoken and written language” (p.31)

According to Garner (2006) Verbal intelligence is the ability to analyze information and solve problems using language-based reasoning. It can involve reading or listening to words, conversing, writing, or even thinking.

Someone who is strong in linguistic-verbal intelligence is able to use words well, both when writing and speaking.

**LOGICAL - MATHEMATICAL INTELLIGENCE**

Gardner (1993) logical-mathematical intelligence is the ability to recognize significant problems and then to solve them. (p. 143)
Following to Garner (1993) describe logical-mathematical intelligence as an ability to understand and solve problems through the reasoning, someone who is strong in logical-mathematical intelligence is good at reasoning, recognizing patterns and logically analyze problems. People with this kind of ability tend to think conceptually about numbers, relationships, and patterns. Logical-mathematical intelligence is related with the logic, the abstractions, the reasoning, the numbers and critical thinking.

**BODILY-KINESTHETIC INTELLIGENCE**

Garner (2006) “The Kinesthetic intelligence is the capacity to solve problems or to create products using your whole body or part of your body” (p.35)

According to Garner (2006) people who have high bodily-kinesthetic intelligence are good at body movement, performing actions and physical control. People in this area are excellent in hand-eye coordination and dexterity.

**MUSICAL INTELLIGENCE**

Garner (2006) defines Musical intelligence “as the facility in the perception and production of music” (p.33)

For Garner (2006) People who have strong musical intelligence are good and thinking in patterns, rhythms, and sounds. They have a strong appreciation for music and are often good at musical composition and performance.

**INTERPERSONAL INTELLIGENCE**

According to Garner (1983) those who have strong interpersonal intelligence are good understanding and interacting with other people. These individuals are skilled at assessing the emotions, motivations, desires and intentions of those around them.
INTRAPERSONAL INTELLIGENCE

For Garner (1983) Individuals who are strong in intrapersonal intelligence are good at being aware of their own emotional states, feelings, and motivations. They tend to enjoy self-reflection and analysis, including daydreaming, exploring relationships with others and assessing their personal strengths.

NATURALISTIC INTELLIGENCE

Garner (2006) defines “Naturalist intelligence as the capacities to make consequential discriminations in the natural world” (p.36)

According to Garner (1983) individuals who are high in this type of intelligence are more in tune with nature and are often interested in nurturing, exploring the environment and learning about other species. These individuals are said to be highly aware of even subtle changes to their environments.

LEGAL FOUNDATION

The National Constitution establish in the Art. 2. That the investigation, built and continuous development of knowledge as a guarantee of the creativity, promotion and the knowledge production for the innovation and scientific formation.

The last 10 years, Ecuador has lived a change in the education system, as the foregoing article say there could not be and scientific formation and knowledge production for the innovation if the national universities do not encourage the investigation and continuous development of knowledge. However, it is the responsibility of the State: “to strengthen public education and co-education, incorporate information technology and communication in the educational process and promote the link education with productive activities”
as it is cited in the Supplement - Official No. 417 (LOEI) The Article 347- literal 8 of the Constitution of the Republic establishes:

The propose of this project is to use new techniques and strategies that students and English teachers can get an additional tool that permit to increase the interest by reading using numerical reasoning exercises, implementing other types of contents in the teaching of English language in public schools.

The plan of Good Life (2013) mentions the importance of quality when in its article about quality expresses “The evaluations and strengthen of the quality are indispensable requirements from all formation process. These principles guarantee educative offers in all level of education through four components: stewardship, teacher development, student’s development and national curriculum “(p.160)

According to plan of Good Life about Quality, (2013) the quality is something that this governments is looking for, as a change to the ancient education system reason why project the University of Guayaquil is preparing to its students for what be they who improve or find new way or strategies that can be used in public school as contribution and sense of educative responsibility
CHAPTER III

METHODOLOGY

RESEARCH DESIGN

This chapter gives relevance to the application of the instruments to know qualitative and quantitative aspects about relation between logical reasoning and reading skill as well as the response to the necessity to change strategies to improve the teaching – learning process and integrate the teaching of English in different subjects in public school.

Through the observation method it was discovered that teachers use a text from Greenwich edition with different topics for this grade however the text does not contain activities where students develop reading comprehension, due to the economic situation and the minister of education politics students do not use text that integrate English with other subjects.

Once exploratory research and bibliographical research finish the investigation will begin analyzing the research to find results to help to demonstrate the influence of logical reasoning in reading skill and demonstrate as the didactic guide with numerical reasoning exercises will help to improve reading skill at “CESAR BORJA LAVAYEN” public school.

TYPES OF RESEARCH

This research about logical reasoning and reading skill is based on different types of investigations:
• According to the research process this research is deductive and inductive
• According to the nature of information this research is quantitative and qualitative
• According to the object this research is descriptive, exploratory and explicative
• According to the approach this research is correlational and non-experimental
• According to the sources this research is bibliographical and empirical
• According to the place this research is field investigation
• According to the numbers of individuals this research is of group

ACCORDING TO THE RESEARCH PROCESS

DEDUCTIVE

A deductive method is intended by the arguer to be (deductively) valid, that is, to provide a guarantee of the truth of the conclusion provided that the argument's premises (assumptions) are true.

In a nutshell the Deductive method is the process of reasoning from one or more statements (premises) to reach a logically certain conclusion. It seeks to refute these hypotheses, drawing from them conclusions to be confronted with the facts.

For this research it is necessary get the conclusion about if it is possible to use word problems (numerical reasoning exercises) to strengthen reading skill, in consequence the deduction is the follow:
(i) Every type of text are useful to develop reading skill.

This method is useful to give to know people a major understanding about logical reasoning and reading skill purpose, intention and criteria

**INDUCTIVE**

Colorado State University (as it is cited in Social Research Glossary, 2015) defines the following: “Inductive method is a form of reasoning in which a generalized conclusion is formulated from particular instances” (paragraph. 2)

According to the text the set of ideas or premises give a generalization of topic, in this research also is used or applied an inductive method. In this research inductive method is determine in the follow way:

(i) To develop reading skill, it is necessary to use a text
(ii) A Type of text are the argumentative texts, after,
(iii) A numerical reasoning exercise is an argumentative text.
(iv) Therefore, it is possible to use numerical reasoning exercise to develop reading skill.

**ACCORDING TO THE NATURE OF INFORMATION**

**QUANTITATIVE**

Statistics is the most widely used branch of mathematics in quantitative research. Statistical methods are used extensively with in fields such as economics and commerce.

Hernández et al., (2003) “quantitative research offers us the possibility of generalizing the results more widely, gives us control over
phenomena and a point of view of counting and magnitudes, also gives us the possibility of replication and a focus on specific points of such phenomena." (p.18)

The objective of quantitative research is to develop and employ mathematical models, theories or hypothesis pertaining to phenomena. Data in quantitative research appears in the forms of numbers and specific measurements as well as research findings in quantitative research can be illustrated in the forms of tables, graphs and pie-charts,

**QUALITATIVE**

There are many differences between qualitative and quantitative research methods and they can be summarized in the following points, first, the concepts in quantitative research methods are usually expressed in the forms of variables, while the concepts in qualitative research methods are expressed in motives and generalizations.

Hernández et al., (2003) mentions “Qualitative research gives depth to data, dispersion, interpretive richness, conceptualization of the environment or surroundings details and unique experiences.” (P.18)

According the foregoing text qualitative research is collecting, analyzing and interpreting data by observing what people do and say. Data in qualitative research appears in the forms of words, images, transcripts, meanings, definitions, characteristics, symbols, metaphors as well as research findings in qualitative studies is usually presented in analysis by only using words.
ACCORDING TO THE OBJECT RESEARCH

EXPLORATORY RESEARCH

To develop this investigation, it was necessary to apply different types of Research among them exploratory research. This investigation looks for give to know definitions, importance and relationship between variables. For Hernández and Fernandez (2002) “the purpose in the exploratory research is to start knowing a community, a context, an event, situation or variable from a set of variables” (p.272)

The thesis have used this research in three points; the first point is about context of the investigation, the second point is about relation of this project with other similar because of this topic about Logical reasoning and reading skill has not been studied before in the faculty of philosophy, school of language, however it was found that in Peru and Australia this topic was already tried using other similar names but the purpose was always the same, the third point is about students diagnostic and verify the use of reading methodology.

The exploratory research let to know a general vision about one of the problem in the “César Borja Lavayen” public school where it was observed the insufficiency that students have in reading skill through the diagnostic, although students do not have the same opportunity to integrate English with other subject like in other schools for many factors

DESCRIPTIVE RESEARCH

According to Hernández and Fernandez (2002) “Descriptive research has the objective to look for, point out, categorize and give a whole vision of the community, event, context, phenomena, or situation” (p.273)
The descriptive research helps researcher to find possible causes of the problem and show a little bit about the reality in public school and give to know some factors where the problem has begun. Identify, records and analyzes the relation between the variables are the characteristics from this research.

Through this research it was found students in this public school are the low and low middle class although they do not have up to dated resources in class, they only use one text full of grammar with limited didactic resources and some teachers do not have even a B2 certificate.

EXPLICATIVE RESEARCH

Explanatory studies are intended to lead to a sense of understanding or understanding of a phenomenon. They point to the causes of physical or social events. They aim to answer questions such as: why does it occur? In what conditions does it occur? They are more structured and in most cases, require the control and manipulation of the variables to a greater or lesser degree.

To locate which of these types of research corresponds to a particular study that is desired to be done, it will be necessary to determine the existing state of knowledge regarding the subject under investigation from a complete review of the literature and the approach that the researcher wishes to give to your study.
ACCORDING TO THE APPROACH RESEARCH

CORRELATIONAL RESEARCH

For Hernández and Fernandez (2002) “Co-relational research means to relate both variables, they are based on ideas and causal hypothesis” (p.274, 275)

It is also a type of research very important, due to the topic of this investigation was not accepted for some thesis supervisors, some of them used to think that mathematic (numerical reasoning) have nothing to do with reading skill however in the theoretical framework it was seen that mathematics can also be used with word problems and it is necessary to know read well and understand the text to solve the numerical reasoning exercise.

QUASI-EXPERIMENTAL RESEARCH

This study was framed according to Hernández et al., (2006) in a quasi-experimental design, because in this type individuals are not assigned in a random way to the groups, but these groups are already formed before the experiment. In other words, so as they were met. In this investigation they were chosen all the 10th grade students at “Cesar Borja Lavayen” public school with the objective to apply a simple diagnostic test and identify the development of reading skill. They all in the final of the investigation will do a survey about reading and logical numerical reasoning.
ACCORDING TO THE SOURCES RESEARCH

BIBLIOGRAPHICAL RESEARCH

According to Arias (2012) “It is a process based on the search, analysis, criticize and interpretation of secondary data, it means what is obtained by other investigators in a documented source, which will be construed because this will provide with new knowledge.” (p. 87)

Because of the employment of investigated documents already carried out, this provides to the present study previous information and its analysis which is applied the criteria of these authors to develop the present investigation, as well as definitions are explained to understand well which are logical reasoning and reading components and determine relation between two variables.

EMPIRICAL RESEARCH

According to the Oxford English Dictionary (1989), defines that the word “empiric is derived from the ancient Greek for experience. Therefore, empirical data is information that is derived from the trials and errors of experience.”

This research use empirical evidence because it is the way of gaining knowledge by means of direct and indirect observation or experience.

This type of investigation was useful because as English teachers know that in classroom it is necessary to use many strategies and use different didactic resources to get students attention and improve their knowledge and English proficiency in English.
ACCORDING TO THE PLACE RESEARCH

FIELD INVESTIGATION

Qualitative research is concerned with understanding and interpreting another person's social world through accessing their lived experiences.

There are three types of field research methods: direct observation; participant observation; and qualitative interviews.

DIRECT OBSERVATION

Data is gathered primarily through close visual inspection of a natural setting. It is an initial approach to understanding a setting, a group of individuals, or forms of behavior prior to interacting with members or developing interview protocols.

PARTICIPANT OBSERVATION

A field research method whereby the researcher develops an understanding of the composition of a particular setting or society by taking part in the everyday routines and rituals alongside its members.

This type of observation is used by ethnographers -- specialists within the fields of anthropology and sociology who focus on recording the details of social life occurring in a setting, community, or society.
In conclusion in this work it was used direct observation with the idea to gather useful information through close visual inspection of a natural setting. It was observed to a group of individuals inside the classroom before interacting with them or develop interview and surveys.

RESEARCH METHODS

“Investigation methods can be defined as procedures and plans employed by researchers to achieve an investigation” (Rajaseka, et al, 2013, p.31)

It was necessary to implement a methodical action that allows achieving objectives. In the present section, here it will be established the main methods to support the current investigation with the aim of offering validity and accuracy to this work where students and teachers will be benefited. This research is supported by the following procedures.

OBSERVATION METHOD

Hernández and Fernandez (2002) define “the observation, as a method for collecting information whose purposes are: explore, describe, understand, identify and give hypothesis.” (p.458)

A closer look to the text above the Observation is the active acquisition of information, the recording of data via the use of instruments, observation employs the senses and it can be; intentioned, selective, illustrated, and interpretative.

Patton, (as it is cited in Hernández and Fernandez, 2002) suggest that “the researcher should set near to the problem to establish his role” (p.459)
The observation is an inspection and study realized by researcher through use of own senses with or without technical devices, the social interest facts, reason why they are taking place spontaneously

In this research it is applied for getting data information about public school history, geographical situation, and socio-economical level of the population, characteristic of education system, infrastructure and help in the diagnostic about insufficiency of reading skill in students in tenth grade.

Powell and Steele, (1996) mention that “− seeing- and -listening- are a key for the observation. The observation provides the opportunity to get information about types of behave and physical aspects without having to depend upon people’s willingness and ability to respond to questions” (paragraph. 2)

A closer look to the foregoing text, Observation is the active acquisition of information from our sense and this information can be registered using instruments. Observations can be qualitative where the absence or presence of a property is noted, or quantitative if a numerical value is attached to the observed fact by counting or measuring. At “César Borja Lavayen” public school was necessary to use this type of method because many information such as: population, infrastructure, economic-social level, curriculum and teacher methodology was used to be analyzed.

**ANALYTIC METHOD**

Majeed (2009) express that “Analysis means -breaking up- of the problem in hand so that it ultimately gets connected with something obvious or already known” (p. 1)
These methods entail connect new aspects discovered with those already know, it is possible separate things that are together about analysis, to know different point of view, possible ways of resolving or simplify something and implement solutions.

The research uses this method through the application of a survey and interview to the English teacher, when the researchers make the diagnostic at the beginning of the research; analyze different texts to find relation between definitions and variables.
### VARIABLE MATRIX

#### INDEPENDENT VARIABLE

<table>
<thead>
<tr>
<th>LOGICAL REASONING</th>
<th>DIMENSION</th>
<th>INDICADOR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Definitions and Importance</td>
<td>What is reasoning?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What is logic?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What is numerical reasoning? Deductive</td>
</tr>
<tr>
<td></td>
<td>Types of Reasoning</td>
<td>Inductive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abductive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verbal</td>
</tr>
<tr>
<td></td>
<td>Others types of reasoning</td>
<td>Numerical abstract connection between</td>
</tr>
<tr>
<td></td>
<td>Reading in Mathematics</td>
<td>reading and math Integrating math</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>READING SKILL</th>
<th>DIMENSION</th>
<th>INDICADOR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Definitions and Importance</td>
<td>What is reading? the importance of reading</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The importance of vocabulary for supporting reading skill</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reading comprehension intensive Extensive</td>
</tr>
<tr>
<td></td>
<td>Types of reading</td>
<td>Reading phases</td>
</tr>
<tr>
<td></td>
<td>Reading process</td>
<td>The seven strategies</td>
</tr>
<tr>
<td></td>
<td>Reading strategy</td>
<td>Relation between reading and writing</td>
</tr>
<tr>
<td></td>
<td>Reading and Written Production</td>
<td></td>
</tr>
</tbody>
</table>

Source: CESAR BORJA LAVAYEN public school
Elaborated By: Ronald Cordova and Joel Velastegui 2016

CHART No. 1
TECHNIQUES AND INSTRUMENTS OF INVESTIGATION

This investigation took as technique survey and interview that according to Arias (as it is cited in Govea, 2009) “techniques and instruments of investigation are several ways to get information” (p.125). The survey is made up 10 items where students should answer according liker scale. It was also taken an interview to the English teacher to get more value to the research.

INTERVIEW

According to Cambridge dictionary (2016) “interview is a meeting in which someone asks you questions to see if you are suitable for a job or course” (p.1)

Understanding this definition above, interview is a procedure designed to obtain information from a person where it is used with technique and through structured questionnaire. The present interview consists of a dialogue between two individuals in which are posed and answered some questions. This instrument is carried out by a researcher who acts as an interviewer and interviewee which is the 10th grade English teacher. The questions that are being applied are the open types allowing researcher to obtain long answers that provide interviewee the opportunity of thinking about the educational problem concerns insufficiency of the reading skill.

SURVEY

Hernández and Fernandez (2002) define a questionnaire “as a group of questions defined to evaluate variables, the question can be open or close. The close question can include two or more alternatives of answers” (p.391)
Following the text above the research will implement surveys also known as questionnaires to students of tenth grade about what strategies they use for developing reading in class and know students’ answers about the use of logical reasoning numerical reasoning to strengthen reading skill. These surveys are based on a Likert-type scale that is a psychometric scale widely employed in Social Science. These types of surveys can be established with closed questions or positive statements that are elaborated beforehand in order to obtain information, a valuation or opinion of a topic studied in written way without the direct intervention of the researchers. Therefore, sampling group must complete the questions on their own.

According to Hernández and Fernandez, (2002) “the scale of Likert-type items is used in investigation instruments with multiple single questions seeking the individual score of each one “(p.369)

The Items employed in Likert scale can have a variety of formats. The following items are used in our survey.

<table>
<thead>
<tr>
<th>LIKERT SCALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>totally disagree</td>
</tr>
</tbody>
</table>


**POPULATION**

Morles (as it is cited in Govea, 2009) “population is a whole by which all conclusions in the investigation will be accepted.” (p.124). it is a whole group of individuals who will be studied. Each member of universe, who will be measure based on their characteristics, elements of a universe or group units. Therefore, to determine the population in this research it can be said that it is represented by 34 individuals at “Cesar Borja Lavayen” public school. The population being studied was constituted by students of tenth grade of upper basic education, Directives and English teacher. The research was taken only to tenth grade
because until this grade student have reached enough vocabulary to read a text and make reading comprehension

Population is shown in chart below:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PERSONNEL</th>
<th>POPULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>students</td>
<td>26</td>
</tr>
<tr>
<td>2</td>
<td>teachers</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>authorities</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>34</td>
</tr>
</tbody>
</table>

Source: CESAR BORJA LAVAYEN public school
Elaborated By: Ronald Cordova and Joel Velastegui, 2016

SAMPLE

Hernández and Fernandez (2002) defined “sample is a population sub-group where the information is collected, the sample should be representative from the population- quantitative approach-, while that according to –qualitative approach- it is a set of people, contexts, events or facts where the information is collected without being representative of population” (p.302)

The instruments of investigation will be applied to the 10th grade teacher and as well as students in individual way. For this reason, it is necessary to obtain a representative sampling of the population since its size which is 34 individuals.

As shown on the table below, the investigation instruments will be applied in the following manner: 26 students of tenth grade, section “A”, academic year 2016-2017, they will be surveyed to achieve a representative sampling.
The sample is also represented by the next formula, taking into account all data gathered from the “César Borja Lavayen” Public School

\[
n = \frac{PQ \times N}{(N-1) \times \frac{\varepsilon^2}{N} + PQ}
\]

Where:

\[\begin{align*}
N &= \text{Sample.} \\
PQ &= \text{Population variance} = 0.25. \\
E &= \text{Error margin} = 0.10 \\
K &= \text{Constant of error correction} = 2. \\
N &= \text{Population} = 34 \\
n &= \frac{34 \times 0.25}{(34-1) \times \frac{0.10}{2} + 0.25} \\
n &= \frac{8.5}{(0.0825) + 0.25} \\
n &= \frac{8.5}{0.3325} \\
n &= 25.56 = 2
\end{align*}\]
ANALYSIS OF RESULTS

Survey realized to 26 students of the 10th grade at “CESAR BORJA LAVAYEN” public school

<table>
<thead>
<tr>
<th>ITEM #1</th>
<th>CODE</th>
<th>ALTERNATIVES</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Totally Disagree</td>
<td>3</td>
<td>11.53%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disagree</td>
<td>3</td>
<td>11.53%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Neither</td>
<td>11</td>
<td>42.30%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Agree</td>
<td>6</td>
<td>23.07%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Totally Agree</td>
<td>3</td>
<td>11.53%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>26</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: CESAR BORJA LAVAYEN public school
Elaborated By: Ronald Cordova and Joel Velastegui, 2016

ЧART No. 5

1. The didactic resources used by the teacher are enough for learning English

Comment: According to the chart above, students have manifested to be a little bit conform with the resources used by their teacher in class Therefore, it is suggested motivate students using others types of didactic materials. In the second chapter it is defined all literature review about logical reasoning looking for a new didactic resource applied to improve reading skill.
2. Teacher should employ a didactic material used before in class instead to use a new one

<table>
<thead>
<tr>
<th>CODE</th>
<th>ALTERNATIVES</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM #2</td>
<td>Totally Disagree</td>
<td>3</td>
<td>11.53%</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>6</td>
<td>23.07%</td>
</tr>
<tr>
<td></td>
<td>Neither</td>
<td>10</td>
<td>38.46%</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>7</td>
<td>26.92%</td>
</tr>
<tr>
<td></td>
<td>Totally Agree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: CESAR BORJA LAVAYEN public school  
Elaborated By: Ronald Cordova and Joel Velastegui, 2016  
CHART No. 6

Comment: According to the chart above, students express to agree about teacher goes on using the same didactic material, therefore, it is suggested that teacher go on using the same, but it is important introduce systematically other didactic material to develop and complete the use of rest of language skill in class. The purpose of this investigation is applied a new strategy to develop reading in class as other option in it.
**TEACHER SHOULD DO THAT HIS/HER STUDENTS OFTEN READ IN CLASS**

<table>
<thead>
<tr>
<th>CODE</th>
<th>ALTERNATIVES</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM #3</td>
<td>Totally Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>2</td>
<td>7.69%</td>
</tr>
<tr>
<td></td>
<td>Neither</td>
<td>3</td>
<td>11.53%</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>8</td>
<td>30.76%</td>
</tr>
<tr>
<td></td>
<td>Totally Agree</td>
<td>13</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: CESAR BORJA LAVAYEN public school
Elaborated By: Ronald Cordova and Joel Velastegui, 2016

**CHART No. 7**

3. Teacher should do that his/her students often read in class

*Comment:* According to the chart number 3, students have manifested hardly ever totally about to read more in class, therefore, it is recommended the use of reading activities. All information about reading and logical reasoning is defined and characterized in the theoretical framework to give importance to the reading activities which they will be applied in the chapter four about proposal.
### WHEN TEACHER EMPLOYS A READING ACTIVITY ENCOURAGE THE INTEREST BY READING IN CLASS.

<table>
<thead>
<tr>
<th>CODE</th>
<th>ALTERNATIVES</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Totally Disagree</td>
<td>2</td>
<td>7.69%</td>
</tr>
<tr>
<td>ITEM #4</td>
<td>Disagree</td>
<td>2</td>
<td>7.69%</td>
</tr>
<tr>
<td></td>
<td>Neither</td>
<td>9</td>
<td>34.61%</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>9</td>
<td>34.61%</td>
</tr>
<tr>
<td></td>
<td>Totally Agree</td>
<td>4</td>
<td>15.38%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: CESAR BORJA LAVAYEN public school
Elaborated By: Ronald Cordova and Joel Velastegui, 2016

![Chart](chart.png)

**Comment:** students have manifested that their teacher does encourage to them when exist a reading activity, therefore, it is suggested that teacher use reading activities where students feel interest by all what they are reading. This research shows a new propose and promote the design of a guide focused on logical reasoning exercises as other way to read in English.
ACQUIRE MORE VOCABULARY IMPROVE THE READING SKILL

<table>
<thead>
<tr>
<th>CODE</th>
<th>ALTERNATIVES</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM #5</td>
<td>Totally Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>6</td>
<td>23.07%</td>
</tr>
<tr>
<td></td>
<td>Neither</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Totally Agree</td>
<td>20</td>
<td>76.92%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: CESAR BORJA LAVAYEN public school
Elaborated By: Ronald Cordova and Joel Velastegui, 2016

5. Acquire more vocabulary improve the reading skill

Comment: students have manifested to agree totally about to increase vocabulary to improve reading comprehension, therefore, it is recommended the use more activities of reading where students can find new words to increase their vocabulary and improve their level of English. In the theoretical framework it was seen the importance of vocabulary to develop reading comprehension and the proposal uses logical reasoning exercises contain vocabulary activities include in it.
### IT IS NECESSARY INCREASE ACTIVITIES OF READING AND WRITTEN PRODUCTION IN CLASS.

<table>
<thead>
<tr>
<th>CODE</th>
<th>ALTERNATIVES</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM #6</td>
<td>Totally Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Neither</td>
<td>2</td>
<td>7.69%</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>7</td>
<td>26.92%</td>
</tr>
<tr>
<td></td>
<td>Totally Agree</td>
<td>17</td>
<td>65.38%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: CESAR BORJA LAVAYEN public school
Elaborated By: Ronald Cordova and Joel Velastegui, 2016

CHART No. 10

#### 6. It is necessary increase activities of reading and written production in class

![Bar chart showing responses](chart.png)

**Comment:** students agree about to increase activities of reading and written production because it very important to learn to express in a written way not only to learn to speak, therefore, it is suggested the use of reading activities where students write about what they think when they read a text. In the theoretical framework it is defined the relation between reading and writing skill and the importance to produce English not only as a receptor.
**IT IS POSSIBLE TO IMPROVE THE READING SKILL USING DIFFERENT TYPES OF TEXT**

<table>
<thead>
<tr>
<th>CODE</th>
<th>ALTERNATIVES</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM #7</td>
<td>Totally Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Neither</td>
<td>4</td>
<td>15.38%</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>10</td>
<td>38.46%</td>
</tr>
<tr>
<td></td>
<td>Totally Agree</td>
<td>12</td>
<td>46.15%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: CESAR BORJA LAVAYEN public school
Elaborated By: Ronald Cordova and Joel Velastegui, 2016

**CHART No. 11**

---

**7. It is possible to improve the reading skill using different types of text**

![Bar chart showing the distribution of responses to the statement](chart.png)

**Comment:** students have manifested to agree in use different text to improve reading skill, therefore, it is suggested the use of different types of texts so that they can diversify their knowledge and develop critical thinking. One of the objectives in this research is to take advantage from different types of text for this reason argumentative text are presented as an option that as well as let students develop critical thinking.
**Item #8**

<table>
<thead>
<tr>
<th>CODE</th>
<th>ALTERNATIVES</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Totally Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Neither</td>
<td>4</td>
<td>15.38%</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>10</td>
<td>38.46%</td>
</tr>
<tr>
<td></td>
<td>Totally Agree</td>
<td>12</td>
<td>46.15%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: CESAR BORJA LAVAYEN public school  
Elaborated By: Ronald Cordova and Joel Velastegui, 2016  
CHART No. 12

9. teacher should use argumentative texts to develop and improve reading

![Bar chart showing the distribution of responses.]

**Comment**: Students manifested to agree in use argumentative text because this type of text helps to develop the sense of reasoning about what they are reading, therefore it is suggested the use of argumentative text to create an environment learning more effective where students thinking and give their own arguments to different topics the can read. To develop reading comprehension, increase vocabulary, develops written production and critical thinking logical reasoning text is used in this research which it is one of the research objectives.
**TO USE A TEXT WITH REASONING ENCOURAGE THE READING COMPREHENSION.**

<table>
<thead>
<tr>
<th>CODE</th>
<th>ALTERNATIVES</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Totally Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Neither</td>
<td>2</td>
<td>7.69%</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>7</td>
<td>26.92%</td>
</tr>
<tr>
<td>ITEM #9</td>
<td>Totally Agree</td>
<td>17</td>
<td>65.38%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
<td>100%</td>
</tr>
</tbody>
</table>

source: CESAR BORJA LAVAYEN public school
Elaborated By: Ronald Cordova and Joel Velastegui, 2016

CHART No. 13

![Bar Chart](chart.png)

**9. to use a text with reasoning encourage the reading comprehension.**

**Comment:** According to the chart above, students hardly ever totally agree in use text with reasoning because they help to comprehend better because they should read once, twice or three time to understand the text and give the correct conclusion about what they are reading, therefore it is recommended the use of logical reasoning exercises to help students to develop more reading strategies. One of the objectives in this research is to use reasoning exercises so that students can develop critical thinking.
### TEACHER SHOULD INCLUDE REASONING ACTIVITIES IN

<table>
<thead>
<tr>
<th>CODE</th>
<th>CLASS ALTERNATIVES</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM #10</td>
<td>Totally Disagree</td>
<td>0</td>
<td>0%</td>
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<tr>
<td></td>
<td>Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Neither</td>
<td>2</td>
<td>7.69%</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>11</td>
<td>42.30%</td>
</tr>
<tr>
<td></td>
<td>Totally Agree</td>
<td>13</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: CESAR BORJA LAVAYEN public school
Elaborated By: Ronald Cordova and Joel Velastegui, 2016

### Chart No. 14

#### 10. Teacher should include reasoning activities in class

- **Totally Disagree**: 0
- **Disagree**: 0
- **Neither**: 2
- **Agree**: 11
- **Totally Agree**: 13

**Total**: 26

**Percentages**: 100%

**Comment**: Students have manifested to agree about teacher uses more reasoning activities in class. After of having known the importance of the use the reasoning in the reading skill through a literature review, statistical and field analysis it is suggested the use of logical reasoning exercises like an instrument more to be applied in class.
TEACHER SHOULD USE NUMERICAL REASONING ACTIVITIES TO DEVELOP THE READING SKILL IN CLASS AND AS WELL AS TO INTEGRATE MATH WITH ENGLISH LANGUAGE.

<table>
<thead>
<tr>
<th>CODE</th>
<th>ALTERNATIVES</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM #11</td>
<td>Totally Disagree</td>
<td>12</td>
<td>46.15%</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Neither</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>10</td>
<td>38.46%</td>
</tr>
<tr>
<td></td>
<td>Totally Agree</td>
<td>4</td>
<td>15.38%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: CESAR BORJA LAVAYEN public school
Elaborated By: Ronald Cordova and Joel Velastegui, 2016

11. Teacher should use numerical reasoning activities to develop the reading skill in class and as well as to integrate Math with English language.

Comment: students have expressed in a meaningful percentage to agree with use numerical reasoning exercise because in this way they can develop not only reading skill but integrate other subjects and develop multiply intelligences even though some students do not like Math neither in Spanish nor English, therefore, it is suggested the use of logical reasoning exercises like an instrument that help to integrate Math with English language according to cross-curricular approach and CLIL (content and language integrated learning)
**TEACHER SHOULD USE OTHER SUBJECTS TO TEACH ENGLISH LANGUAGE IN CLASS**

<table>
<thead>
<tr>
<th>CODE</th>
<th>ALTERNATIVES</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM #12</td>
<td>Totally Disagree</td>
<td>5</td>
<td>19.23%</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>1</td>
<td>3.84%</td>
</tr>
<tr>
<td></td>
<td>Neither</td>
<td>2</td>
<td>7.69%</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>7</td>
<td>26.92%</td>
</tr>
<tr>
<td></td>
<td>Totally Agree</td>
<td>11</td>
<td>42.30%</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

**source:** CESAR BORJA LAVAYEN public school  
**Elaborated By:** Ronald Cordova and Joel Velastegui, 2016  
**CHART No. 16**

**12. Teacher should use other subjects to teach English language on class**

**Comment:** Students have expressed that it is necessary to use other subjects in class like science and Math, government should implement English language with other subjects in public schools and teacher can apply English with contents about science and mathematics through the pedagogical instruments. Therefore, it is suggested the use of science and mathematical so that students in public school can have the same opportunity to learn English as others similar. As an overall view the objective is determine the influence of logical reasoning in reading skill and it can be said that in all subjects’ students should read to learn and the better way to learn is using different text which through the reasoning students are going to improve their way of reading to make the teaching and learning easier.
INTERVIEW TO THE 10TH GRADE TEACHER

It was necessary to apply an interview to the teacher in charge of the 10th grade, with the objective to collect information useful for the research. Miss Elizabeth Sojos was the teacher who was applied the interview with a prepared questionary.

All questions have relation with the variables studied.

1. Which are the difficulties that teachers find when do they apply reading?

   It is difficult for our students cannot pronounce well some words and they don’t have enough vocabulary to read completely

2. What kind of didactic resources do you use in class to develop reading skill?

   We use the English book from Hector Manuel Serna

3. What kind of method(s), technique(s) or strategy do you apply in class to develop reading skill?

   I ask my students to translate what they are reading and research into the dictionary words that they do not know

4. Innovate didactic resources is important to develop the communicative competence, what do you think about?

   Of course, they are very important to improve the teaching and learning process
5. Why do you think that it is important to use reasoning exercises in class?

I regard that it is necessary to use activities where students can exercise their memory, activities that develop critical thinking, it does more meaningful the learning process.

6. Which of these types of text would get more the student`s attention; a short text from the book or a numerical reasoning exercise? Why?

I believe that if they look something new to learn in class it perhaps can catch the attention of them because it is something that they have not seen before, and I can also say that the reasoning exercises are something that I would like to apply in my classes.

7. Why do you think that integrate English language with other Subjects would improve the English level in public schools?

I think that in the versatility of knowledge students can learn better, integrate English with other subjects improve the level of English in public schools.

8. Which are the difficulties that public schools might have to implement the English language with another subject?

The most important factor would be the economic situation because integrate text with science and mathematics represent to invest between 30 and 40 dollars to acquire a English book with this kind of contents as well as Teachers in public schools are not being taught about how to teach English using other subjects.
9. After having observed how to apply this type of exercises to strengthen reading skill in class, what is or are your expectative(s)?

   It seems to me excellent idea use mathematics for improving reading comprehension and it is a new way to increase vocabulary.

10. Why do you consider that this project should be implemented in all grades and courses in the “CESAR BORJA LAVAYEN “public school?

   I consider that it is a project where students from public schools can gain competitively as well as it is proved that students that study English have more and better skills
THE RESEARCH PROJECT QUESTIONS

1. Is it possible to use logical reasoning to increase and improve reading skill?

Of course, it is possible increase and improves reading skill because this project has already been proved in other countries with very good results. For example, RAMP project (Implementing a Reading and Mathematics, by Dr Kate O’Brien, 2008) in Sydney Australia or the THINKING LAB project by University of Cambridge for Latin-American students, where students use other subject as science or mathematics for improving reading comprehension, develop critical thinking and learn about science and mathematics at the same time.

2. How would teachers take advantages of the didactic guide with logical reasoning exercises?

Teachers in public schools are working with a book from Greenwich library in consequence this guide is adapted to different contents from this book. If teacher wants to apply new vocabulary or a new grammar structure the only thing that teacher has to do is adapt the model to his / her necessities in class. It is also going to let to the teacher develop reading comprehension, critical thinking, written production, speaking production and interaction.

3. Are the logical reasoning exercises other way to learn English in class?

It is a new way to give to the students a meaningful learning, they would have the opportunity of expanding knowledge and to know about things that they use in a real life.
4. Would the logical reasoning exercises be considered a ludic activity?

As many public schools, students do not have are or they are not learning English integrating other subjects in their national curriculum, it will not be applied like an additional subject, but it can be used like a

5. What advantages would the high school get from our project?

Public schools should find the way to improve the level of English language in their students, we live in a global world with social, economic and technological relation, if the government of Ecuador leaded by Raphael Correa president is sending many students abroad and it wants that its students be more competitive the minister of Education should give more importance to the teaching and learning of English language, if Ecuador wants to be more competitive should prepare students in public school a little more because according them we live in the knowledge age.

The advantage for the public schools not only for “Cesar Borja Lavayen” public school, would be to start implementing or integrating other subject using this type of project and their students can compete with other similar in their region
CONCLUSION

At the end of this investigation it was observed

- At “CESAR BORJA LAVAYEN” public school Students show low level of English proficiency

- English Teacher uses only a text of grammar where the use of reading activities is limited

- There is insufficiency of reading methodologies in class

- There is an insufficiency of didactic resources aim to develop and improve reading skill

- There is a disinterest and low motivation for reading activities.
RECOMMENDATIONS

After mentioning the conclusions, it is necessary to go on with the following recommendations

- Teachers should involve more activities focus on reading for increasing vocabulary and improve reading comprehension.

- Teacher should find the better strategy for improving the reading skill in class

- Teacher should use many methods, instruments and didactic materials to develop reading skill

- Implement a proposal of reading comprehension bearing in mind diversity of types of texts, especially argumentative text for increasing or improving cognitive processes.

- It is recommended the use of numerical reasoning exercises as a reading activity with dual-focused aim and kept into lesson plans

- Teachers should look for methods, strategies or instruments that introduce other subjects or part of them to integrate English with other subject and develop critical thinking, vocabulary, improve reading skill, written production and speaking production,

- Teachers should be prepared constantly because the teaching-learning process changes according to the students’ necessities
SAMPLE VARIANCE

According to Hernández and Fernandez, (2002) the sample variance is a statistic method where other methods are based on” (p.511)

Simple variance is a measure about how far or near is a set of information, if sample variance is small, it means that values from the set of information are well grouped, in contrast, if the sample variance is big; it means that numbers are further.

In this investigation, it was used the first information from the first question in the student survey, there is no need to use the rest of questions due to the total and the numbers of categories is the same. (26; 5)

<table>
<thead>
<tr>
<th>CATEGORIES</th>
<th>Totally Disagree</th>
<th>Disagree</th>
<th>Neither</th>
<th>Agree</th>
<th>Totally Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREQUENCY</td>
<td>3</td>
<td>3</td>
<td>11</td>
<td>6</td>
<td>3</td>
<td>26</td>
</tr>
</tbody>
</table>

Source: Thesis about logical reasoning and reading, 2016 Elaborated by: Joel Velastegui and Ronald Cordova

After that, it is very important to get the sample mean using the following information where (x) represent all categories.

<table>
<thead>
<tr>
<th></th>
<th>x1</th>
<th>x2</th>
<th>x3</th>
<th>x4</th>
<th>x5</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>11</td>
<td>6</td>
<td>3</td>
<td>26</td>
</tr>
</tbody>
</table>

Source: Thesis about logical reasoning and reading, 2016 Elaborated by: Joel Velastegui and Ronald Cordova

First it is added all categories and its answer will be divided by number of category minus one, Therefore, the answer or the sample mean is 5.2, as it is shown in the chart. With all this information, it will be calculated the sample
### SAMPLE VARIANCE PROOF

<table>
<thead>
<tr>
<th></th>
<th>x</th>
<th>x</th>
<th>x - x</th>
<th>(x - x)^2</th>
<th>∑[(x - x)^2]</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td>3</td>
<td>5.2</td>
<td>-2.2</td>
<td>4.84</td>
<td>4.84</td>
</tr>
<tr>
<td>x2</td>
<td>3</td>
<td>5.2</td>
<td>-2.2</td>
<td>4.84</td>
<td>4.84</td>
</tr>
<tr>
<td>x3</td>
<td>11</td>
<td>5.2</td>
<td>5.8</td>
<td>33.64</td>
<td>33.64</td>
</tr>
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<td>3</td>
<td>5.2</td>
<td>-2.2</td>
<td>4.84</td>
<td>4.84</td>
</tr>
</tbody>
</table>

Source: Thesis about logical reasoning and reading, 2016
Elaborated by: Joel Velastegui and Ronald Cordova

### SAMPLE MEAN

<table>
<thead>
<tr>
<th></th>
<th>x</th>
<th>total / 5 (categories)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>5</td>
<td>5.2</td>
</tr>
</tbody>
</table>

Sample Mean
3,3,3,6,11 = 5.2

Source: Thesis about logical reasoning and reading, 2016
Elaborated by: Joel Velastegui and Ronald Cordova

\[
\begin{align*}
\text{n-1} & = 5-1 = 4 \\
\sum \frac{(x-x)^2}{n-1} & = \frac{48.8}{4} \\
& = 12.2
\end{align*}
\]

Source: Thesis about logical reasoning and reading, 2016
Elaborated by: Joel Velastegui and Ronald Cordova

Once it is calculated the sumatory from all this information, it will be divided by the number of categories minus one. It gives an answer of 12.2, this value is considered our sample variance and if it is taken square root from 12.2 it gives 3.49 and it is considered the sample standard deviation.

### SAMPLE VARIANCE

\[
s^2=\frac{\sum (x-x)^2}{n-1}
\]

s^2=12.2

### SAMPLE STANDARD DEVIATION

\[
s=(12.2)^{1/2}
\]

s=3.49

Source: Thesis about logical reasoning and reading, 2016
Elaborated by: Joel Velastegui and Ronald Cordova

CHART No. 22
This result (12.2) from sample variance shown the relation between the reality and what the researcher wishes to get in this case our sample mean is 5.2, however the sample variance shows how far or near it is from the sample mean. Bearing in mind the purpose of this research it can be said that the idea to use reasoning activities to improve reading skill should be adjusted in other words should be applied because the sample does not show an information that is happen now, but it shows what can be applied.

**CHI – SQUARE**

The chi – square zero hypotheses propose a distribution of probability totally specified like a mathematical model from the population that has generated the sample.

To calculate what it is expected it is taken the total from the first file multiplied by the total from the column number 1 after that in this same way with all files and columns from the chart.

<table>
<thead>
<tr>
<th>DEPENDENT VARIABLE</th>
<th>6</th>
<th>It is necessary increase activities of reading and written production in class.</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDEPENDENT VARIABLE</td>
<td>11</td>
<td>Teacher should use numerical reasoning activities to develop the reading skill in class and as well as to integrate math with English language.</td>
</tr>
</tbody>
</table>

Source: Thesis about logical reasoning and reading, 2016
Elaborated by: Joel Velastegui and Ronald Cordova

<table>
<thead>
<tr>
<th>Observed</th>
<th>6</th>
<th>0</th>
<th>0</th>
<th>2</th>
<th>7</th>
<th>17</th>
<th>26</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>4</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>2</td>
<td>17</td>
<td>21</td>
<td>52</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Thesis about logical reasoning and reading, 2016
Elaborated by: Joel Velastegui and Ronald Cordova

CHART No. 23

CHART No. 24
CALCULATED CHI-SQUARE

<table>
<thead>
<tr>
<th>OBSERVED</th>
<th>EXPECTED</th>
<th>Chi square=(F1-C1)^2/C1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>8.5</td>
<td>0.26470588</td>
</tr>
<tr>
<td>17</td>
<td>10.5</td>
<td>4.02380952</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
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<td>0.225</td>
</tr>
<tr>
<td>4</td>
<td>10.5</td>
<td>4.02380952</td>
</tr>
</tbody>
</table>

CALCULATED CHI-SQ. 22.5373249
GL (Freedom grades) 4
alfa(p) 0.05
TABULAR CHI-SQUARE 11.0705

In the foregoing chart it is shown the chi-square where all information about what it has been observed and what it is expect will be used to measure if the zero hypothesis is rejected or not.

The zero hypothesis will be rejected if the chi-square is a number greater than tabular chi-square, (tabular chi-square numbers are shown in chi-square table). The hypotheses are the followings:
ZERO HYPOTHESES

The logical reasoning does not influence in the strengthening of the reading skill.

ALTERNATIVE HYPOTHESIS

The logical reasoning does influence in the strengthening of the reading skill.

With these two-hypothesis given and the answers in the following square it can be said that in this table the zero hypothesis is rejected, therefore it should be chosen the alternative where it defines that the logical reasoning influences in the strengthening of the reading skill.
CHAPTER IV
THE PROPOSAL

GUIDE WITH NUMERICAL REASONING EXERCISES

BACKGROUND

The sense of this proposal is to develop students’ skills in the foreign language using logical reasoning in the strengthening of the reading skill and give knowledge and debate around teaching CLIL, (contents of languages and Integrate learning) in students of 10th grade at “Cesar Borja Lavayen” public school, academic year 2016–2017. It will help to English teachers with a numerical reasoning exercises guide.

Readers are not done for reading only literary text, poems and stories, what happen? If your students do not understand a math word problem or numerical reasoning exercise for example; -Carla has 10 apples but she should give her sister 2 of them when she comes back from school. How many apples does Carla have, now if her sister does not come from school yet? - teacher wonder “I am not a Math teacher” although “I am not so good at teaching numbers”, how can I apply the three phases of the reading in this exercise? It is not impossible to do because teacher does not have to be a genius to teach this kind of exercises in class, teacher only need to know the fundamental math operations; sum, difference, multiplication and division.

Precisely, this work is made for teachers, they are being able to use a simple numerical reasoning exercise for increase the vocabulary in a faster way improving at the same time reading comprehension.
RATIONALE

Reading has been traditionally the perfect way of accessing to the knowledge in the high school as well as the reading is one of the first skills learned by non-native speakers of English language.

Due to insufficiency of activities aimed to strengthen reading skill in students at “Cesar Borja Lavayen” public school it has proposed a guide with an alternative for English teachers who want to use other way to develop reading comprehension in class and develop multiple-intelligence and critical thinking in class.

The aim of this study was to give to know the importance to use reasoning from the first years of education because teachers know that the way of teaching have changed and today classes are pointed to be functional and interdisciplinary so that teacher use science with mathematic however in the public schools the teaching of English language is very different from private schools where English languages is connected with other subjects to let students to learn easier a foreign language. In public school’s teachers even teach grammar and vocabulary but it is something that can be changed.

When you connect English with other subject the English language knowledge is wider, student minds begin discovering new words (vocabulary), and along with it, they begin thinking about science or arithmetical processes, the critical thinking make students participate most actively in English language learning, so that to learn English will not be longer a difficult work for students, their interests will be focused on science, mathematics, social studies, art and English language too. It is relevant promote activities to improve critical thinking.
Different social factors especially internationalization impact, has generated the necessity to improve the English proficiency level CLIL (contents of languages and Integrate learning) methodology is an answer to this factor. CLIL refers to situations where subjects, or parts of subjects, are taught through a foreign language with dual-focused aims, this project was developed by David Marsh in 1994. CLIL methodology is very useful to improve a foreign language and diversify contents and knowledge. Numerical reasoning exercises have taken CLIL methodology as a base of its content.

OBJECTIVE OF THE PROPOSAL

GENERAL OBJECTIVE

✓ To design a guide focused on logical reasoning exercises through the information written in text about how to take advantages from the logic reasoning exercises to strengthen the reading skill.

SPECIFIC OBJECTIVES

✓ To give to the English teacher a guide with a tool designed to develop mathematic text comprehension so that they can be employed in different stage of educational process to introduce, reinforce and assess the knowledge.

✓ To use numerical reasoning exercises or word problems as a didactic resource aimed to strengthen the reading and writing skill.

✓ To improve the reading skill and the reading comprehension of argumentative text in young Learners of 10th grade at “CESAR BORJA LAVAYEN” public school using logical reasoning exercises.
✓ To apply reading strategies

✓ To integrate both English language and mathematics

IMPORTANCE

In order to low performance in English language learning, this project wants to improve reading skill increasing vocabulary in a different way in class. Generally, students learn words or numbers, but they are not used, all what you learn should be applied constantly in real situations if you teach numbers to students they only learn to memorize them but if you teach numbers and apply them in a logical numerical reasoning situation, students will check these words or numbers twice or three times doing that the word or number would be learned faster and it does not need to be explained other time.

Encourage and motivate will be always part of our job. It is not necessary to know so much about mathematics for applying these exercises, our project is designed for being used with the basic mathematical operations; difference, sum, division and multiplication. It is all what teacher needs to know to use the didactic guide in which teachers can find a brief explanation about what she or he has to do for teaching it to your students

FEASIBILITY

A feasibility study is an analysis of how successfully a project can be completed the use of feasibility studies is going to determine potential positive and negative outcomes of a project before applying it.
ECONOMIC FEASIBILITY

For doing this Project possible it is necessary to have economic resources and in spite of not being a project in great scale the resources are very important. It was needed three reams of paper, transport, markers, print service.

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Source: Thesis about logical reasoning and reading, 2016
Elaborated by: Joel Velastegui and Ronald Córdova

CHART No. 27

HUMAN FEASIBILITY

This project will be accessible because it has the support of the authorities and teachers and it was demonstrated during its development, so the financial resources were obtained by us. It will be given a copy of this material to the public school, so that it will be used in the classroom by teachers who want to improve students’ reading skill using numerical reasoning exercises.

TECHNICAL FEASIBILITY

Technical feasibility is so important as the foregoing feasibilities, in it is taken in account the knowledge that the researchers have obtained through the long years as well as it was necessary make surveys to know different aspects in the teaching and learning of English language, especially in reading skill.

Legal documents were vital because without them is impossible to do a deeper investigation and thank to them authorities gave this project
white card to develop and have the opportunity of first hand of implementing the use of numerical reasoning exercises to strengthen reading skill

**DESCRIPTION**

This guide helps teacher and students in develop reading skills, provide teachers who want to apply mathematics exercises (word problems or logic numerical exercises) to strengthen the reading skill; they can use it as a new strategy for reading skill, increase new vocabulary, put in practice grammar structures, as well as to integrate English with another subject.

Teachers in this project will find the necessary reading information about basic mathematical symbols, basic operations, list of algebraic phrases and phrases to explain each exercise. All this information should be given before students begin to know how to resolve the numerical reasoning exercise. It is useful apply prior exercises with basic arithmetical operations such as: addition, subtraction, multiplication and division when students achieve learn symbols and use them in short exercises it will be necessary to give them words to help them to make written production in other words students should use connectors for explaining short exercises, once students have achieved that they will be ready to begin to read a numerical reasoning exercises at this point teacher will have to use prior vocabulary for example: foods, animals, clothes, fruits etc. so a new vocabulary will get be used along with it , teacher always give the meaning of the new vocabulary in the worksheet next students begin to read once, twice , three time or the time student needs to solve the exercise and complete the table (Carroll diagrams) to give order to the things.

It is possible that teacher can change the literature of the text involving his/her ideas, teacher can invent a similar situation of the text
he/she can take something away from the text or add something to it, the most important thing is always adding new words to the text specially those words that are being seen or used in class from the grammar book.

**PHILOSOPHICAL ASPECT**

Paul and Elder, (2001) expresses that “thinking is distorted, partial, uninformed or down-right prejudiced. The quality of our life and that of what we produce, make, or build depends on our thought” (p.4)

According to Paul and Elder, (2001) everything what people do is developed by the thought, it is used when people need clarify and put in order ideas, answer to the problems they need to solve, understand concepts, make inferences or examine things from different points of view and think in possible causes and consequences

The use of numerical reasoning exercises let students develop critical thinking because they have to explain with their own words why this number is the answer in the numerical reasoning exercise. They can develop critical thinking through grouping many ideas and make conclusions using deductive and inductive method.

**PEDAGOGICAL ASPECT**

“An individual-centered school would have to be rich in evaluating the capabilities and individual tendencies. Try individuals associate not only with curricular areas, but also with particular forms of teaching those subjects”

-Howard Garner-
CONTENT AND LANGUAGE INTEGRATED LEARNING (CLIL).

The term CLIL was coined by Marsh, (1994). This programme CLIL has to do with situations where subjects, or parts of subjects, are taught through a foreign language with dual-focused aims, students should learn content and simultaneous they learn of a foreign language. The acronym CLIL means (Content and Language Integrated Learning) it become the most widely used

According to Euro-CLIC, (as it is cited in CLIL4u by Attard et al., 2014) “CLIL is a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language.” (p.6)

Eurydice, (2006) note that “CLIL refers to the promotion of innovative methods and, in particular, to the teaching of classes in a foreign language for disciplines other than languages, providing bilingual teaching” (p.8)

Considering the foregoing texts, this way of teaching is also used in Ecuador, the national curriculum is based on a language-driven CLIL approach, where content from other disciplines are used for meaningful and purpose language use it has demonstrated that in private school students have better level in English language due to teachers apply content and Language Integrated Learning

For Rowley and Cooper, (2009) “through cross-curricular approaches teachers can use history, geography, language art and mathematics to have different contexts and link subjects between them in consequence learning has most relevance and interest to students. At the same way it also demonstrates how these subjects can be used as the basis upon which values can be developed in the curriculum.” (paragraph. 1)
English Language curriculum recognizes the importance of connection between English Language and other subjects through cross-curricular collaboration. The integration of contents is very important for strengthening and developing to the critical thinking, as well as to improve the level of English and develop the reading skill.

The proposal should be an alternative and should be aimed to innovate or improve an idea so that the resultant product get be better than the prior product. In this research it is thought in something really attractive for reading skill and at the same time to integrate reading with mathematics through the use of the numerical reasoning as other way to encourage students to learn English. The foreign language teaching-learning need to apply a lot of methods for each one of the language skills bearing in mind that reading skill is the first skill in being put in practice by learners.

THE SCHOOL AND THE ARGUMENTATIVE TEXT

Caballero, (2008) argues that:

“The argumentative texts are one of the main preoccupations into school because it is necessary to access to complex way of thinking and give instruments for what individual face against specific problems in his/her daily life.” (Caballero, 2008) also remarks “it has observed that in the school are very important the activities with expository and narrative texts, if it is observed very well each one of books, independent of its source, the argumentative reading are very scares” (p.39)

In the foregoing paragraph above, to create individuals with critical thinking is something that has taken importance from the first years of the
school, the today education is framed in the constructivist model where teachers, book stores and Minister of Education have the necessity to apply logical reasoning in their contents, lesson plans and national curriculums aimed to develop individuals with vision around their environments for this reason teachers in class should practice with their students argumentative readings whatever it be.

MATHEMATICAL LANGUAGE

NCCA (National Council for Curriculum and Assessment), (2009) explains that:

“Mathematics should be a language with its own vocabulary of both words and symbols. Many students confuse mathematical language with ‘ordinary’ language. They say, ‘He’s bigger than me’ when they mean older, or ‘My table is longer than his’ when they mean wider. It is important to teach this language actively to the students and to reinforce it daily. Students will need to be exposed to mathematical language and have it reinforced at a level in a variety of situations before they will develop the ability to use it themselves. The vocabulary of mathematics, symbols, and tools are used circumstances. In general, the student is unlikely to hear or read much mathematical language outside the classroom. The teacher, as the mediator between the student and the world of mathematics, needs to examine the classroom use of mathematical language carefully.” (P.5)

PSYCHOLOGICAL ASPECT

If it is taken in account the multiple intelligences from (Garner, 1983), it can be said that this project also looks for integrating and complement some of these such as: linguistic and verbal intelligence.
when students use a text and develop reading strategies to understand a text they are using this type of intelligence however not every students in classroom have the same ability or motivation about reading in consequence the use of logical reasoning help to discover students with the ability for solving problems, teacher can use this guide because it is a complete activity where cross -curriculum approach can be used for integrating other subject like a math through the numerical reasoning; develop critical thinking, let teacher to develop different intelligences and integrate those students who do not feel motivated for a typical text and improve reading skill.

LEGAL ASPECT

LOES: CHAPTER 3: PRINCIPLES OF HIGHER EDUCATION

Art 13. - Functions of the Education System Superior. - The functions of the System of Higher Education are:

b) Promote the creation, development, transmission and dissemination of science, art, technology and culture

According to the legal article 13 in the LOES (upper education law) by its acronyms in Spanish it could be remarked that the upper Education in Ecuador promotes and pursues the quality in Education through the science, art, technology and investigation with the purpose to generate citizens full of knowledge capable of generating a society more productive.
LOEI: TITLE I: GENERAL PRINCIPLES CHAPTER ONE SCOPE, PRINCIPLES AND PURPOSES

m. EDUCATION FOR DEMOCRACY. -Educational institutions are democratic spaces for exercise of human rights they are promoters of the culture of peace, transformers of the reality, transmitters and maker of knowledge, promoters of multiculturalism, equity, inclusion, democracy, citizenship, social cohesion, participation, social integration, national, Andean, Latin American and worldwide

In the foregoing article mentions that the educational institutions are promoter of democracy and maker of knowledge without democracy there is not possibilities to enrich the knowledge in our children, opportunities of a country come for teaching children to variety of knowledge
CONCLUSIONS OF THE PROPOSAL

The use of numerical reasoning to strengthen Reading skill has been a topic that have not tried before in any investigation at university of Guayaquil in school of language, it was born with the idea of improving teaching and learning of English language based on three focuses: Reading, Reasoning and Mathematics.

Reading skill is an activity by which students learn every day, it is clear that one can learn English without reading however if students give up using it, they cannot learn English because the English language teaching and learning process is a set of abilities that interact and connect one each other. Reading is the first skill in being learned by students and it is a very important to make students learn different strategies for making comprehensions about the world where they live to.

When students learn to make comprehensions about what they read they are using their minds for developing critical thinking through the logical reasoning. The reasoning is the mental capacity to find answer to some questions, they can deduct about some text in class and emit their own criteria or conclusions and it entails to share this knowledge with others. Nowadays many teachers have implemented since primary school strategies where children should use their thought by find their answer from a little reasoning activity and help students to discover their own strategies to comprehend short and long text.

Few are the opportunities that students in public schools must learn English using science, language art and mathematics even when the national curriculum is based on the cross-curricular approach, however the real teaching and learning of English in public schools is different yet, in
consequence Educational institutions should open doors those people who wants transformer of the reality and a helping hand because they have the responsibility to make knowledge in them.

Therefore, it could be considered as a strategy that come beyond of a simple activity in class, join the three components reading, reasoning and mathematics would be in this moment the better way to implement the cross-curricular approach using English language as well as the beginning of using other subject for teaching English in public schools.
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ANNEXE I
## ASIGNACIÓN DEL TUTOR

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<td>GODÍN GÓMEZ, JESUS RAFAEL</td>
<td>TEMA: La importancia del aprendizaje activo en la comprensión lectora.</td>
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<td>ESPINOSA, VIOLA</td>
<td>TEMA: La influencia del contexto cultural en la lectura.</td>
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<td>3</td>
<td>ARNALDO MORALES, MARIA LUISA</td>
<td>TEMA: La relación entre la gramática y la lectura.</td>
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<td>GONZÁLEZ, DANIEL</td>
<td>TEMA: La importancia del trabajo en equipo en el desarrollo de la lectura.</td>
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<td>TEMA: La importancia del sonido en la lectura.</td>
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<td>BERNAL, LUIS</td>
<td>TEMA: La importancia del contexto visual en la lectura.</td>
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<td>7</td>
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<td>TEMA: La importancia del vocabulario en la lectura.</td>
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<td>GONZÁLEZ, JAVIER</td>
<td>TEMA: La importancia del análisis de textos en la lectura.</td>
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<td>9</td>
<td>GONZÁLEZ, JULIO</td>
<td>TEMA: La importancia del pensamiento crítico en la lectura.</td>
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<td>TEMA: La importancia del análisis de la estructura del texto en la lectura.</td>
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SOLICITUD ACEPTADA POR EL COLEGIO FISCAL “CESAR BORJA LAVAYEN”

Oficio No. 199
Guayaquil, 18 de Julio del 2016

MSc.
RECTOR DEL COLEGIO FISCAL “CESAR BORJA LAVAYEN”
Ciudad-

De mis consideraciones:

Me dirijo a Ud. con el fin de solicitarle, se sirva otorgar la autorización pertinente, para que los estudiantes: CORDOVA LAPO RONALD IVÁN Y VELASTEGUI PONCE JOEL JONATHAN, de la Escuela de Lenguas y Lingüística puedan aplicar el proyecto de investigación, para la elaboración del trabajo de titulación, previo a la obtención del título de Licenciado(a) en Ciencias de la Educación, mención Lengua Inglesa y Lingüística.

TEMA: The use of logical reasoning, to strengthen the reading skill.

PROPUESTA: Design of a guide with logical reasoning exercises.

Por considerar, que el proyecto a realizarse, tendrá la repercusión en beneficio de la Institución que usted acertadamente dirige, aspiro que nuestra petición tenga la acogida favorable de su parte.

Le anteparto mis reconocimientos.

Atentamente,

Ab. Jacinto Calderón Vallejo, MSc.
DIRECTOR DE LA ESCUELA DE LENGUAS Y LINGÜÍSTICA

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<td>MSc. Jacinto Calderón Vallejo</td>
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ANNEXE II
CERTIFICADO DEL O LA RESPONSABLE DE ANTI-PLAGIO
ANNEXE III
ENTREVISTA A LA LICENCIADA JACKELINE SOJOS DOCENTE DE LOS DÈCIMOS GRADOS A-B-C

11. ¿Cuáles son las dificultades que los docentes encuentran cuando aplican lecturas comprensivas?

Es difícil para nuestros estudiantes no poder pronunciar bien las palabras además no tienen suficiente vocabulario para leer un texto completo.

12. ¿Qué clase de recursos didácticos usted usa en clase para desarrollar la habilidad lectora?

Nosotros usamos el libro de Héctor Manuel Serna, para Décimo grado.

13. ¿Qué clase de métodos, técnicas o estrategias usted aplica en clase para desarrollar la habilidad lectora?

Yo pido a mis estudiantes que traduzcan lo que ellos están leyendo y buscar en el diccionario las palabras que ellos no sepan

14. ¿Innovar recursos didácticos es importante para desarrollar competencias comunicativas, que piensa acerca de eso?

Por supuesto, los recursos didácticos son muy importantes para mejorar el proceso de la enseñanza y aprendizaje.
15. ¿Por qué usted piensa que es importante usar ejercicios de razonamiento en clase?

Yo considero que es necesario usar actividades donde los estudiantes puedan hacer ejercitar su memoria, actividades para desarrollar el pensamiento crítico hacen más significativo el proceso de enseñanza –aprendizaje.

16. ¿Cuáles de estos tipos de texto consiguen más la atención de los estudiantes; un texto corto de un libro o un ejercicio de razonamiento numérico y por qué?

Yo creo que si ellos ven algo nuevo para aprender en clase esto quizás pueda capturar la atención de ellos porque esto es algo que ellos no han visto antes y yo puedo también decir que los ejercicios de razonamiento son algo que me gustaría aplicar en mi clase.

17. ¿Por qué usted piensa que integrar el lenguaje con otras asignaturas mejoraría el nivel de inglés en los colegios públicos?

Pienso que, en la versatilidad de conocimiento, los estudiantes pueden aprender mejor, y además es muy útil integrar inglés con otras asignaturas para a mejorar el nivel en los colegios públicos.

18. ¿Cuáles son las dificultades que los colegios públicos podrían encontrar para implementar el inglés con otras asignaturas?

El factor más importante sería la situación económica porque integrar textos de ciencia y matemática representa una inversión de entre 30 o 40 dólares para adquirir un texto de este tipo además los profesores no se capacitán en
enseñanza del inglés con otras asignaturas a pesar que en el currículo nacional se menciona el enfoque transversal para todas las asignaturas.

19. ¿después de haber observado cómo aplicar este tipo de ejercicios para fortalecer la habilidad lectora en clase, cuál o cuáles son sus expectativas?

Esto me parece una excelente idea, usar matemáticas para mejorar la lectura comprensiva y esto es una nueva forma de incrementar el vocabulario

20. ¿Por qué tu consideras que este tipo de proyectos debe ser implementado en todos los cursos en el colegio “CESAR BORJA LAVAYEN”?

Considero que es un proyecto donde los estudiantes de los colegios públicos puedan ganar competitividad además esto ayuda a los estudiantes que estudian a mejorar sus habilidades en lengua extranjera.
5. ¿Es posible usar razonamiento lógico para incrementar y mejorar la habilidad lectora?

Por supuesto que es posible incrementar y mejorar la habilidad lectora porque este proyecto ya ha sido probado en otros países con buenos resultados. por ejemplo, el proyecto RAMP (implementación de lectura y matemáticas) por la doctora Kate O’Bien, (2008) en Sidney, Australia, así también proyectos como LABORATORIO PARA PENSAR por la Universidad de Cambridge dirigida a estudiantes de América Latina, donde los estudiantes usan otras asignaturas para mejorar la comprensión lectora, desarrollar pensamiento crítico, y a la vez aprender de ciencia y matemáticas.

6. ¿Cómo los profesores tomarían ventaja de la guía con ejercicios de razonamiento numérico?

Los docentes en los colegios públicos trabajan con el texto de la editorial Greenwich en consecuencia esta guía es adaptada a diferentes contenidos de este texto, si los profesores quieren aplicar nuevo vocabulario o una nueva estructura gramatical la único que deben hacer es adaptar el modelo a sus necesidades en clase. Esto también va a permitir a los profesores desarrollar la comprensión lectora, pensamiento crítico, producción escrita, producción de inglés hablado.
7. ¿Son los ejercicios de razonamiento numérico otra manera de aprender inglés en clase?

Definitivamente esta es una nueva manera para dar a los estudiantes un aprendizaje significativo, ellos tendrían la oportunidad de expandir su conocimiento y conocer acerca de lo que ellos usan en la vida real.

8. ¿Los ejercicios de razonamiento numérico serían considerados una actividad lúdica?

Como en muchos colegios públicos los estudiantes no tienen o ellos no están aprendiendo inglés integrando otras asignaturas en su currículo esto sería aplicado como una actividad adicional.

9. ¿Qué ventajas el colegio tendría de nuestro proyecto?

Los colegios públicos deben encontrar la manera de mejorar el nivel de inglés en sus estudiantes, vivimos en un mundo globalizado con relaciones en los social, lo económico, lo tecnológico, si el gobierno del Ecuador liderado por Rafael Correa está enviando estudiantes al exterior y quiere que sus estudiantes sean más competitivos, el ministerio de educación debería dar más importancia a la enseñanza del inglés en todos sus niveles y así preparar a nuestros estudiantes para que sean más productivos ya que como lo dice este gobierno vivimos en la era del conocimiento.

La ventaja para los colegios públicos no solo para el colegio “Cesar Borja Lavayen”, sería comenzar a implementar o integrar otras asignaturas usando este tipo de proyectos
ENCUESTA APLICADA A LOS ESTUDIANTES

ENCUESTA A LOS Y LAS ESTUDIANTES DEL DÉCIMO GRADO PARALELO “A” DEL COLEGIO FISCAL “CESAR BORJA LAVAYEN”

ENCUESTA SOBRE HABILIDAD LECTORA Y RAZONAMIENTO NUMÉRICO

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<td>1 Los recursos didácticos usados por el profesor son suficientes para aprender inglés</td>
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<td>2 El profesor debe emplear un material didáctico usado antes en lugar de usar uno nuevo</td>
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<td>3 El profesor debe hacer que sus estudiantes a menudo lean en clase</td>
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<td>4 Cuando el profesor emplea una actividad de lectura estimula el interés en leer en clase</td>
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<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11 El profesor debe usar razonamiento numérico para desarrollar la habilidad lectora y además integrar matemáticas con ingles</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12 El profesor debe usar otras asignaturas para enseñar ingles en clase</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**Fuente:** CESAR BORJA LAVAYEN public school
**Elaborado por:** Ronald Córdova and Joel Velastegui, 2016
ANNEXE IV
EVIDENCIAS FOTOGRAFICAS

EDIFICIO DEL COLEGIO FISCAL “CESAR BORJA LAVAYEN”

Edificio donde funciona el colegio fiscal “CESAR BORJA LAVAYEN “
Ubicado en las calles francisco de Marcos No. 105 y Eloy Alfaro, sur de la ciudad de Guayaquil-Ecuador. ( 2016, Julio, 12)

Fuente: colegio fiscal “CESAR BORJA LAVAYEN “
Elaborado por: Ronald Córdova y Joel Velastegui, 2016

RECTORADO DEL COLEGIO FISCAL “CESAR BORJA LAVAYEN”

Junto con el Sr. Msc. Daniel Castillo, Rector del Colegio, quien en primera instancia recibió nuestra solicitud donde Joel Velastegui y Ronald Córdova, solicitaban permiso para poder cumplir con su tesis en esta institución (2016, Agosto, 24)

Fuente: colegio fiscal “CESAR BORJA LAVAYEN “
Elaborado por: Ronald Córdova y Joel Velastegui, 2016
DOCENTE DE LENGUA EXTRANJERA DE LOS DÉCIMOS GRADOS A-B-C

Con la Licenciada, Jacqueline Sojos profesora de los décimos grados, en su entrevista a través de un cuestionario .(2016, Septiembre, 5)

Fuente: colegio fiscal “CESAR BORJA LAVAYEN”
Elaborado por: Ronald Córdova y Joel Velastegui,2016

APLICACIÓN DE LAS ENCUESTAS A LOS Y LAS ESTUDIANTES DEL DECIMO CURSO PARALELO “A”

Con los estudiantes del décimo grado, paralelo “A”, aplicando las encuestas de nuestra investigación. (2016, Septiembre, 5)

Fuente: colegio fiscal “CESAR BORJA LAVAYEN”
Elaborado por: Ronald Córdova y Joel Velastegui,2016
SUPERVISION DE TESIS

Supervisión y seguimiento de desarrollo de tesis de grado por parte del Dr. Eduardo Torres Vivar. (2016, desde agosto, 25 a Octubre, 20)

Fuente: colegio fiscal "CESAR BORJA LAVAYEN"
Elaborado por: Ronald Córdova y Joel Velastegui, 2016
ANNEXE V
DIDACTIC GUIDE

NUMERICAL REASONING EXERCISES

CONTENTS

1. Instructions to apply Logical reasoning exercises on reading skill
2. READING MATH SYMBOLS
   A. List of math symbols
   B. Cardinal numbers 1 to 1000
   C. List of algebraic phrases
   D. International basic units
   E. Words to explain the exercise
3. NUMERICAL REASONING EXERCISES

1. INSTRUCTIONS OF LOGICAL REASONING EXERCISES

The way how teacher should apply reading with numerical reasoning is given in three steps:

STEP ONE

Each numerical reasoning exercise model comes with a vocabulary and key words section below the exercise argument; teacher should write vocabulary and meaning of it (the vocabulary will be these used in class) and give students key words necessaries to explain the logical numerical reasoning exercise in particular
STEP TWO

Make a reading comprehension

Teachers should allow students enough time for reading, interpretation and discussion. The numerical reasoning exercises or word problems in this guide are designed to make that students work in 45 minutes of class but it is possible that teacher can use this exercise as a model and personalize it. However, it is necessary design a new model taking in account the time that it will take in solve it.

STEP THREE

After students have read the text, have them discuss and defend their interpretation of the logical numerical exercise. In this phase it necessary to use key words given by teacher in the last section of the exercise. In this phase students apply written production. The following example shows the way how a word problem or numerical reasoning looks like:

...............................................................................................................................

“Ann has four apples. Her friend Mary gives her three more apples each day for a (five-day) week. How many apples does she have at the end of the week?

...............................................................................................................................

Clearly, this gives rise to the numerical expression $4 + (5 \times 3)$, and evaluating this numerical expression then gives the solution “Ann has 19 apples at the end of the week.

It is crucial that these exercises involve vocabulary used in class, for example in the exercise above, teacher has used APPLES; fruits, FOUR; numbers and other vocabulary such as: WEEK and HAVE, grammatical
structures; SIMPLE PRESENT, POSSESSIVE ADJECTIVES AND COMPARTIVE FORM. This sort of reading generates an evaluation through written production and critical thinking.

As any other type of text word problem is not different from others however when they are used constantly contents and vocabulary are understood more efficient than any other text because the fact to read and read again once, twice or three times for understanding, it makes student get knowledge faster

2. READING MATH SYMBOLS

**Objective:** to know key terminology and prepare students to solving exercises.

- It is necessary that students learn key terminology used in mathematical word problems before attempting to solve.

- Once English language learners know the key terminology it will be easier to learn how to write numerical equations as well as it is important teacher provides students with opportunities to learn and practice key vocabulary words

- While key words are very important, they are only part of the process.

- This unit provides to the teacher some explicative charts as a help before applying exercises.

- Teachers who are not comfortable with math typically prefer teaching reading and language arts, however this guide is designed for every
teacher because it is easy to use, the only thing teacher has to know is use add, subtraction, multiplication, division and simple percentage exercise
A. LIST OF MATH SYMBOLS

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>MEANING</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>=</td>
<td>Equals</td>
<td>1+1 = 2</td>
</tr>
<tr>
<td>()</td>
<td>Grouping symbols PARENTHESES</td>
<td>2(a−3)</td>
</tr>
<tr>
<td>[ ]</td>
<td>Grouping symbols BRACKETS</td>
<td>2[ a−3(b+c) ]</td>
</tr>
<tr>
<td>{}</td>
<td>set symbols</td>
<td>{1,2,3}</td>
</tr>
<tr>
<td>π</td>
<td>π</td>
<td>A = πr²</td>
</tr>
<tr>
<td>%</td>
<td>Percentages</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Square root (“radical”)</td>
<td>√4 = 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADDITION</th>
<th>SUBTRACTION</th>
<th>MULTIPLICATION</th>
<th>DIVISION</th>
</tr>
</thead>
<tbody>
<tr>
<td>plus</td>
<td>minus</td>
<td>times</td>
<td>divided by</td>
</tr>
</tbody>
</table>

B. CARDINAL NUMBERS 1 TO 1000

<table>
<thead>
<tr>
<th>NUMBERS FROM 1 TO 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>1       ONE 16       SIXTEEN</td>
</tr>
<tr>
<td>2       TWO 17      SEVENTEEN</td>
</tr>
<tr>
<td>3       THREE 18     EIGHTEEN</td>
</tr>
<tr>
<td>4       FOUR 19     NINETEEN</td>
</tr>
<tr>
<td>5       FIVE 20     TWENTY</td>
</tr>
<tr>
<td>6       SIX 30       THIRTY</td>
</tr>
<tr>
<td>7       SEVEN 40     FORTY</td>
</tr>
<tr>
<td>8       EIGHT 50     FIFTY</td>
</tr>
<tr>
<td>9       NINE 60       SIXTY</td>
</tr>
<tr>
<td>10      TEN 70       SEVENTY</td>
</tr>
<tr>
<td>11      ELEVEN 80     EIGHTY</td>
</tr>
<tr>
<td>12      TWWELVE 90     NINETY</td>
</tr>
<tr>
<td>13      THIRTEEN 100   ONE HUNDRED</td>
</tr>
<tr>
<td>14      FOURTEEN 1000 ONE THOUSAND</td>
</tr>
<tr>
<td>15      FIFTEEN</td>
</tr>
</tbody>
</table>

118
## C. LIST OF ALGEBRAIC PHRASES

<table>
<thead>
<tr>
<th>PHRASE</th>
<th>EXPRESSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>total of a number and 5</td>
<td>( b + 5 )</td>
</tr>
<tr>
<td>a number increased by 4</td>
<td>( n + 4 )</td>
</tr>
<tr>
<td>h take away 2</td>
<td>( h - 2 )</td>
</tr>
<tr>
<td>2 take away by a number</td>
<td>2 - ( h )</td>
</tr>
<tr>
<td>a number minus 11</td>
<td>( k - 11 )</td>
</tr>
<tr>
<td>11 minus a number</td>
<td>11 - ( k )</td>
</tr>
<tr>
<td>a number decreased by 7</td>
<td>( d - 7 )</td>
</tr>
<tr>
<td>the difference of n and 25</td>
<td>( n - 25 )</td>
</tr>
<tr>
<td>the difference of 25 and n</td>
<td>( 25 - n )</td>
</tr>
<tr>
<td>5 less than a number</td>
<td>( x - 5 )</td>
</tr>
<tr>
<td>x less than the number 5</td>
<td>( 5 - x )</td>
</tr>
<tr>
<td>the product of r and 4</td>
<td>( 4r )</td>
</tr>
<tr>
<td>7 times a number</td>
<td>( 7p )</td>
</tr>
<tr>
<td>double the number</td>
<td>( 2x )</td>
</tr>
<tr>
<td>triple the number</td>
<td>( 3x )</td>
</tr>
<tr>
<td>the quotient of 12 and m</td>
<td>( 12/m )</td>
</tr>
<tr>
<td>a number divided by 3</td>
<td>( f/3 )</td>
</tr>
<tr>
<td>y over 7</td>
<td>( y/7 )</td>
</tr>
</tbody>
</table>
D. INTERNATIONAL SYSTEMS OF UNITS

<table>
<thead>
<tr>
<th>BASE</th>
<th>UNIT</th>
<th>SYMBOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>meter</td>
<td>M</td>
</tr>
<tr>
<td>Mass</td>
<td>kilogram</td>
<td>Kg</td>
</tr>
<tr>
<td>Time</td>
<td>second</td>
<td>S</td>
</tr>
<tr>
<td>temperature</td>
<td>Celsius or kelvin</td>
<td>C or k</td>
</tr>
</tbody>
</table>

PREFIXES INDICATE WHICH MULTIPLE OF TEN TO USE.

<table>
<thead>
<tr>
<th>BASE</th>
<th>SYMBOL</th>
<th>EQUIVALENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kilometer</td>
<td>km</td>
<td>1000</td>
</tr>
<tr>
<td>Hectometer</td>
<td>Hm</td>
<td>100</td>
</tr>
<tr>
<td>Dekameter</td>
<td>Dm</td>
<td>10</td>
</tr>
<tr>
<td>Meter</td>
<td>m</td>
<td>1</td>
</tr>
<tr>
<td>Decimeter</td>
<td>dm</td>
<td>0,1 - ( 10 )</td>
</tr>
<tr>
<td>Centimeter</td>
<td>cm</td>
<td>0,01 - ( 100 )</td>
</tr>
<tr>
<td>Millimeter</td>
<td>mm</td>
<td>0,001 - ( 1000 )</td>
</tr>
</tbody>
</table>

E. WORDS TO EXPLAIN THE EXERCISE

<table>
<thead>
<tr>
<th>Should</th>
<th>Because</th>
<th>Therefore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Must</td>
<td>for</td>
<td>Hence</td>
</tr>
<tr>
<td>As</td>
<td>For the reason</td>
<td>One may conclude</td>
</tr>
<tr>
<td>First ... after that</td>
<td>So we have</td>
<td>One may infer</td>
</tr>
</tbody>
</table>
3. NUMERICAL REASONING EXERCISES

**Objective:** to give teacher models about numerical reasoning exercises so that he/she can adapt it to his/her necessities.

- Read word problems slowly and carefully several times so that all students comprehend
- Practice problem solving daily in class
- It is possible, break up the problem into smaller segments.
- All word problems is designed for being modify according to teacher necessities, he or she can design his/her simple logical numerical reasoning exercise
- They all can be applied in all grades and courses, teacher should know the level of his/her students before designing the personalized exercise
- In these exercises teacher can change or adding his/her own vocabulary or grammatical structure used at this moment in class.
THE FOUR CAROLA`S FRIENDS HAVE A CONVERSATION, EACH ONE OF THEM, HAVE DARK GLASSES.

**BETTY**: I don`t have blue eyes  
**ELISA**: I don`t have grey eyes  
**MARY**: I have grey eyes  
**LEYLA**: I don`t have black eyes

If it is known that only one of them have blue eyes and the rest of them have the grey eyes although one of them is lying, who of them have blue eyes?

<table>
<thead>
<tr>
<th></th>
<th>Has blue eyes</th>
<th>Has grey eyes</th>
<th>Who lie?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BETTY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MARY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ELISA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CAROLA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LEYLA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**VOCABULARY**

<table>
<thead>
<tr>
<th>EACH</th>
<th>DARK</th>
<th>GLASSES</th>
<th>GREY</th>
<th>KNOWN</th>
<th>LIE</th>
<th>ALTHOUGH</th>
</tr>
</thead>
</table>

**KEY WORDS FOR EXPLANATION**

Therefore  
Consequently  
So we have  
Because
MARY IS A DRESsMAKER; SHE SOLd TO JANeTH AND CLAIRE SOME CLOTHES FOR THE NEw SEASON WINTER/SPRING:

   a. She sold to Janeth seventy-four items of clothing
   b. Claire has eight Checkered skirts and as well as, thirty-eight Flowery dresses more than Janeth
   c. First Mary had designed one hundred four Flowery dresses but two of them were not delivered because of no having the same colors from the others
   d. To Janeth liked checkered skirts so much, for this reason she bought forty-two of them

<table>
<thead>
<tr>
<th>FLOWERY DRESSES</th>
<th>CHECKERED SKIRTS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAIRE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JANETH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VOCABULARY</th>
<th>KEY WORDS FOR EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRESSMAKER</td>
<td></td>
</tr>
<tr>
<td>SOLD</td>
<td></td>
</tr>
<tr>
<td>SELL</td>
<td></td>
</tr>
<tr>
<td>SEASON</td>
<td></td>
</tr>
<tr>
<td>ITEMS OF CLOTHING</td>
<td></td>
</tr>
<tr>
<td>CHECKERED</td>
<td></td>
</tr>
<tr>
<td>DELIVERED</td>
<td></td>
</tr>
<tr>
<td>DELIVER</td>
<td></td>
</tr>
<tr>
<td>BOUGHT</td>
<td></td>
</tr>
<tr>
<td>BUY</td>
<td></td>
</tr>
<tr>
<td>Therefore</td>
<td></td>
</tr>
<tr>
<td>Consequently</td>
<td></td>
</tr>
<tr>
<td>So we have</td>
<td></td>
</tr>
<tr>
<td>Because</td>
<td></td>
</tr>
<tr>
<td>As well as</td>
<td></td>
</tr>
</tbody>
</table>
### EXERCISE 3

7 OUT OF EVERY 10 PEOPLE QUESTIONED WHO EXPRESSED A PREFERENCE LIKED A CERTAIN BRAND OF CEREAL. WHAT IS THIS AS A PERCENTAGE?

<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Key Words for Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUT OF EVERY N</td>
<td>Therefore</td>
</tr>
<tr>
<td>CERTAIN</td>
<td>Consequently</td>
</tr>
<tr>
<td>BRAND</td>
<td>So we have</td>
</tr>
<tr>
<td>PERCENTAGE</td>
<td>Because</td>
</tr>
<tr>
<td></td>
<td>Divide for</td>
</tr>
</tbody>
</table>

#### % Percentage

| 1 out of every 10 |  |
| 2 out of every 10 |  |
| 3 out of every 10 |  |
| 4 out of every 10 |  |
| 5 out of every 10 |  |
| 6 out of every 10 |  |
| 7 out of every 10 |  |
| 8 out of every 10 |  |
| 9 out of every 10 |  |
| 10 out of every 10 |  |
**EXERCISE 4**

PETER ASKS SOMEONE IN THE STREET, WHAT TIME IS IT? AND THIS PERSON SAYS: “IN 20 MINUTES IN MY WATCH THE HOUR WILL BE 10:32”. IF HE OR SHE HAD PUT FORWARD THE WATCH IN 5 MINUTES. WHAT TIME WAS IT 10 MINUTES AGO?

<table>
<thead>
<tr>
<th>Time before 10:32</th>
<th>Real time</th>
<th>Real Time 10 minutes ago</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**VOCABULARY**

ASK
PUT FORWARD
SOMEONE
AGO

**KEY WORDS FOR EXPLANATION**

I think that it should be...
If the time before is.....
I consider that the answer is ...
Therefore
Consequently
So we have
Because

---

**EXERCISE 5**

I TAKE BREAKFAST EVERY MORNING AT 7; 30 AM, BEFORE GOING TO SCHOOL. IF I EAT FOR 15 MINUTES, AT WHAT TIME DO I LEAVE FOR SCHOOL?

<table>
<thead>
<tr>
<th>Breakfast time</th>
<th>Time you spend to eat</th>
<th>Time you leave for school</th>
</tr>
</thead>
<tbody>
<tr>
<td>7; 30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**VOCABULARY**

OUT OF EVERY
CERTAIN
BRAND
PERCENTAGE

**KEY WORDS FOR EXPLANATION**

Therefore
Consequently
So we have
Because
EXERCISE 6

IN A TEST YOU GAINED 24 MARKS OUT OF 40. WHAT PERCENTAGE IS THIS?

<table>
<thead>
<tr>
<th>% PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 out of every 40</td>
</tr>
<tr>
<td>8 out of every 40</td>
</tr>
<tr>
<td>12 out of every 40</td>
</tr>
<tr>
<td>16 out of every 40</td>
</tr>
<tr>
<td>20 out of every 40</td>
</tr>
<tr>
<td>24 out of every 40</td>
</tr>
<tr>
<td>28 out of every 40</td>
</tr>
<tr>
<td>30 out of every 40</td>
</tr>
<tr>
<td><strong>34 out of every 40</strong></td>
</tr>
<tr>
<td>38 out of every 40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VOCABULARY</th>
<th>KEY WORDS FOR EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAIN MARKS</td>
<td>Therefore</td>
</tr>
<tr>
<td></td>
<td>Consequently</td>
</tr>
<tr>
<td></td>
<td>So we have</td>
</tr>
<tr>
<td></td>
<td>Because</td>
</tr>
</tbody>
</table>
### EXERCISE 7

30 OUT OF 37 GAMBLING SITES ON THE INTERNET FAILED TO RECOGNISE THE DEBIT CARD OF A CHILD. WHAT IS THIS AS A PERCENTAGE?

<table>
<thead>
<tr>
<th>30 out of every 37</th>
<th>% PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 out of every 37</td>
<td></td>
</tr>
<tr>
<td>10 out of every 37</td>
<td></td>
</tr>
<tr>
<td>15 out of every 37</td>
<td></td>
</tr>
<tr>
<td>20 out of every 37</td>
<td></td>
</tr>
<tr>
<td>25 out of every 37</td>
<td></td>
</tr>
<tr>
<td>30 out of every 37</td>
<td></td>
</tr>
<tr>
<td>35 out of every 37</td>
<td></td>
</tr>
<tr>
<td>40 out of every 37</td>
<td></td>
</tr>
<tr>
<td>34 out of every 40</td>
<td></td>
</tr>
<tr>
<td>38 out of every 40</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VOCABULARY</th>
<th>KEY WORDS FOR EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUT OF EVERY</td>
<td>Therefore</td>
</tr>
<tr>
<td>CERTAIN</td>
<td>Consequently</td>
</tr>
<tr>
<td>BRAND</td>
<td>So we have</td>
</tr>
<tr>
<td>PERCENTAGE</td>
<td>Because</td>
</tr>
</tbody>
</table>

### EXERCISE 8

I MISSED THE BUS BECAUSE I CAME FIFTEEN MINUTES LATER. IF THE BUS TOOK OFF AT 1:45 PM, AT WHAT TIME DID I ARRIVE AT THE BUS STOP?

<table>
<thead>
<tr>
<th>Time the bus took off</th>
<th>Time you came late</th>
<th>Time you arrived at the bus stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1; 45</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VOCABULARY</th>
<th>KEY WORDS FOR EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUT OF EVERY</td>
<td>Therefore</td>
</tr>
<tr>
<td>N</td>
<td>Consequently</td>
</tr>
<tr>
<td>CERTAIN</td>
<td>So we have</td>
</tr>
<tr>
<td>BRAND</td>
<td>Because</td>
</tr>
<tr>
<td>PERCENTAGE</td>
<td></td>
</tr>
</tbody>
</table>
IF YESTERDAY WERE EQUAL TO TOMORROW, IT WOULD LACK 2 DAYS FOR WHAT IT BE SUNDAY. WHAT DAY IS TODAY?

a. MONDAY
b. TUESDAY
c. WEDNESDAY
d. THURSDAY
e. FRIDAY

<table>
<thead>
<tr>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before yesterday</td>
<td>Yesterday</td>
<td>Today</td>
<td>tomorrow</td>
<td>Day after tomorrow</td>
</tr>
</tbody>
</table>

SOLVING: yesterday = tomorrow, it means, -1 plus 1 is equal to 0, and zero is today according to the table. BUT the text says that lack 2 days for what it would be Sunday, two days according to the table is 2, two is SUNDAY and two days before is FRIDAY

<table>
<thead>
<tr>
<th>VOCABULARY</th>
<th>KEY WORDS FOR EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUT OF EVERY N CERTAIN BRAND PERCENTAGE</td>
<td>Therefore Consequently So we have Because</td>
</tr>
</tbody>
</table>