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Developing Reading Comprehension through Graphic Organizers in CLIL

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Research Report submitted

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Abstract

The main purpose of this research study was to determine how the application of graphic organizers affects the development of students' reading skills in CLIL. This research followed an action research approach and it was carried out at a state school with 36 ninth graders. According to the data collected in the needs analysis, there is a lack of reading comprehension skills as well as appropriate strategies to read. The strategy to address the problem was the use of graphic organizers and involvement of topic related to other subjects. The instruments for data collection were reading tests, questionnaires and teacher's journal. After the implementation and the data analysis, it was found that the graphic organizers promote reading comprehension, develop reading strategies, and enhance Content and Language Integrated Learning. These tools allow the learners to analyze the texts, select important information and organize the content developing lower and higher thinking skills to construct knowledge. The organization of the information read using graphics allows the learners to retain the content of the text as the graphic organizers promote meaningful learning, the organizers are valuable tools to connect the previous and new information that the reader elicits from a text. Although the texts contained a lot of unknown vocabulary and the learners had never received instruction in Content and Language Integrated Learning they overcame these difficulties using the organizers and glossaries. At the end of the implementation, they concluded that they learned language and content using those strategies.

Keywords: graphic organizers; reading comprehension; CLIL.

Resumen

El objetivo principal de este estudio de investigación fue determinar cómo la aplicación de los organizadores gráficos afecta el desarrollo de las habilidades de lectura de los estudiantes en el aprendizaje integrado de contenido y lengua extranjera. Esta investigación siguió un enfoque de investigación acción y se llevó a cabo en una institución educativa estatal con 36 estudiantes de

noveno grado. De acuerdo con los datos recogidos en el análisis de necesidades hay una escasa comprensión de lectura, así como estrategias adecuadas para leer. La estrategia para abordar el problema fue el uso de organizadores gráficos y la integración de contenidos de otras asignaturas. Los instrumentos para la recolección de datos usados son: pruebas de lectura, cuestionarios y el diario de campo de la docente. Después de la implementación y el análisis de los datos se encontró que los organizadores gráficos promueven la comprensión de lectura, desarrollan estrategias de lectura, y mejoran el aprendizaje integrado de contenidos y lengua extranjera. Estas herramientas permiten a los estudiantes analizar los textos, seleccionar información importante y organizar el contenido desarrollando habilidades de pensamiento de orden inferior y superior para construir conocimiento. La organización de la información leída usando gráficos permite a los estudiantes retener el contenido del texto ya que los organizadores gráficos promueven el aprendizaje significativo, los organizadores son herramientas valiosas que permiten conectar la información previa y la nueva que el lector tiene de un texto. Aunque los textos contenían una cantidad considerable de vocabulario desconocido y los estudiantes nunca habían recibido instrucción en el aprendizaje de contenidos de otras asignaturas en inglés superaron estas dificultades usando los organizadores y los glosarios. Al final de la implementación los participantes concluyeron que aprendieron el lenguaje y el contenido usando esas estrategias.

Palabras claves: organizadores gráficos; comprensión de lectura; aprendizaje integrado de contenido y lengua extranjera.

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Chapter 1: Introduction

1.1 Introduction to the study

The school has the commitment to prepare learners to face academic life and to educate them integrally. In the process of helping the learners to face life, the school provides them with elements to develop certain skills. Reading is one of those skills that support English language learning process since it goes beyond the decoding of a text. The school has the possibility to show the learners they can read not only written texts but also pictures, gestures and even realities that will allow them to build their thinking.

There are several reasons why reading skill has a great importance in learning. In the first place, it makes the learners understand the world. The interpretation of the text allows them to make sense of what they are reading. Nevertheless, this process of interpretation involves more than a decoding process to elicit information from a text; it also allows the reader to be aware of the language (Wallace, 2004) and to discover many possible worlds that are portrayed in the readers' mind through the interaction with the text, which depends on many aspects, such as the background knowledge, the purpose of reading and the strategies used to read. It means it can be a different experience for each reader (Alderson, 2000).

In addition to the process of interpreting a text, through reading it is possible to develop vocabulary since the words in a text are within a context, which lets the reader make connections among the words and store the vocabulary in their long-term memory which improves the reader's lexis (Sousa, 2005). Another important reason for developing reading is that providing the learners with reading strategies might help them to become independent readers and

autonomous learners because they construct knowledge based mainly on what they read. Thus, reading has great impact on the students' cognitive development since it enhances creativity by giving them the opportunity to create different worlds and to make them aware of the language they use.

Due to lack of instruction on intensive reading, some students may have trouble to develop reading strategies, which are very important for them to organize the information they read (Bromley, Irwin-De Vitis, & Modlo, 1995). Consequently, schooling has an important role in fostering reading skills using tools that help learners to fully comprehend a text and organize the information they read. Graphic organizers, for example, are tools that make learners achieve higher levels of thinking (Bellanca, 2007).

The research and the evolution in language teaching have given the teachers the opportunity to use different approaches and methodologies aimed at making the learning and teaching processes easier and effective, giving special importance to offer a different perspective to teaching a foreign language; one of them is the CLIL (Content and Language Integrated Learning) approach which benefits language knowledge as well as content knowledge learning; this approach also increases motivation and self- confidence in the students (Goss, 2009), it focuses on meaning without forgetting forms as they are immersed within a context, which promotes meaningful language and content learning.

Given the above, it might be argued that reading has an important role in language learning and in content learning as well. Reading benefits vocabulary acquisition and also develops cognitive and metacognitive strategies to make connections between the new and the

prior knowledge (van Kraayenoord, 2010), which also contributes to content learning. Reading

also enhances the understanding of concepts since, through this skill, it is possible for the

learners to infer meaning, and to connect concepts in a network using the information contained

in a text. Here lies the importance of providing the learners with strategies that could help them

to become better readers and appreciate the importance of this skill in their learning process.

Consequently, this study aimed at enhancing ninth graders reading skills by providing them with

strategies to comprehend what they read through the use of graphic organizers, and promoting

not exclusively language learning but content learning as well. Thus, the learners might have a

different perception of what reading and learning mean, which will be essential in their future

academic and personal development.

1.2 Rationale of the study

1.2.1   Needs analysis and problem statement

This project was conducted at a public school in Bogota, Colombia, with 36 ninth

graders; their average age is 15 (See section 3.3.1). They are A1 learners according to the

Common European Framework (Council of Europe, 2001). According to standards for teaching

English Language established by the Colombian Ministry of Education, the students should be

able to read in order to obtain information about different subjects to extend their knowledge and

to use a variety of reading comprehension strategies taking into account the text typology.

Additionally, they should be able to analyze a text, getting its main idea, details and making

inferences (M. Education and B. Council, 2006). However, these aspects are not considered in

the subject syllabus because reading is a way of input, and reading strategies are not mentioned

nor the purposes for reading or kinds of reading.

A needs analysis was implemented, using a diagnostic reading test (See Appendix C:)

and a questionnaire (See Appendix D:). These instruments were used in order to gather

information that could give details about the learners' reading comprehension at that moment

and to recognize their reading strategies as well. The results showed that the participants of this

study did not know how to use graphic organizers as a note-taking strategy to learn from the

texts they usually read. The data gathered in the needs' analysis revealed that they had

difficulties summarizing; getting main idea and details, and comparing and contrasting

information. The results indicated that most of the learners do not enjoy reading and the main

reason for this is that they do not understand the texts because they lack vocabulary.

Furthermore, they affirmed that they usually read to accomplish the school tasks. It was also

found that they do not use any reading strategy.

The reading diagnostic test showed that this group of learners has had little practice

summarizing information on a graphic organizer. There are also some gaps in reading

comprehension; although some vocabulary was given to the students in the pre-reading section,

they were not able to infer meaning. The graphic organizers were used to assess three different

reading skills (a) getting main idea and details, (b) summarizing and (c) comparing contrasting

information. The reading tests results revealed that the learners need improvement in getting the

main idea and details from a text. Most of the students had a good score in summarizing;

nevertheless, they had difficulties organizing the information in the graphic organizer provided.

Additionally, the learners did not have good results when they were asked to compare and contrast information.

1.2.2   Justification of problem's significance

Reading is a way of approaching language as it helps learners to be aware of how the language works (C. Wallace, 1992). In this sense, teachers might promote language learning by presenting the language in context through different kinds of texts. Bearing in mind that reading plays an important role in language learning; this study endeavors to promote students' use of different ways to grasp texts in order to enhance reading and learning the language as well.

Reading comprehension requires instruction in order to encourage language and content learning. People are usually exposed to different kinds of texts; even the fact of interpreting signs means that we are reading. Nevertheless, just having a text and recognizing the words does not guarantee comprehension or interpretation (Sousa, 2005). When reading, there are some challenges learners have to face. In the first place, vocabulary might be unknown; secondly, reading requires practice and strategies, and the reader should relate the content of the reading to the real world; in other words, the content of the text should be meaningful in order to motivate the learners to read, to have a good experience of reading and to increase knowledge. Taking into account the mentioned aspects, learners require appropriate instruction to visualize reading as an important, enjoyable and productive activity, which consequently, will take them to discover knowledge.

Taking into consideration the importance of reading as a way of approaching language and instruction in reading comprehension, students benefit from the use of graphic organizers in reading texts in CLIL lessons; by not only enhancing their learning process and strategies when they understand a text in English, but also by reinforcing contents of a subject different from English language, which might help them to improve their cognitive skills (Coyle, Hood, and Marsh, 2010). In terms of teaching, this study is an opportunity for language teachers to reflect on their teaching practices, on the way of presenting the information in a foreign language, and on how to foster reading by providing the students with reading comprehension strategies.

1.2.3   Strategy selected to address problem

When facing a text, readers should be aware of the existing connections among the elements of it. It is not enough to understand isolated elements because the brain better stores words in the long-term memory when the reader establishes connections among them (Thornbury, 2002). Reading contributes to building schematic knowledge that is the reader's background knowledge, which activates at the time of processing information (Carrell & Eisterhold, 1983). It also allows the reader to connect previous with new knowledge, producing meaningful reading.

It has been found that graphic organizers (GOs, hereafter) help learners to have a visual and better organization of the information they have read (Praveen & Premalatha, 2013); therefore, it is easier for them to connect the prior knowledge with new information. In addition, GOs can be used at any stage of the reading process to enhance cognitive and metacognitive

skills (Bromley et al., 1995). Therefore, the strategy to address the investigation problem considers the graphic organizers as instruments that will benefit comprehension and will help the students to consolidate knowledge.

Furthermore, this research project attempts to foster language learning in CLIL through reading, using graphic organizers as a reading strategy. By reading in CLIL, the learner has to face skills such as analyzing, organizing, explaining, among others, in order to grasp the meaning of a text and to build knowledge (Llinares, Morton, & Whittaker, 2012). In this way, they can learn language, as well.

1.3 Research question(s) and objective(s)

This study's research objective is, *to determine how the application of graphic organizers affects the development of students' reading skills in CLIL.* The corresponding research question is *how does using graphic affect the learning of language and content in a reading context of A1 (CEFR) L2 ninth graders?* The specific objectives set to support the research objective are:

- To determine how effective were the GOs to organize the read information.

- To stablish the success of using GOs in content and language integrated learning.

1.4 Conclusion

Summing up the aspects previously mentioned reading comprehension skill is an ability that students should develop. The development of it might help the learners to foster learning language and the acquisition of knowledge. If students receive appropriate guidance on reading strategies by means of graphic organizers, they will learn how to organize the information elicited from a text and they will find relationships among the components of it (Nuttal, 1996) so

that, they will increase comprehension and interpretation of knowledge. Additionally, this study

considers the advantages of CLIL approach, which benefits language and subject learning. It also

promotes a natural acquisition of grammatical features because they are involved in learning

content (Coyle et al., 2010). This approach also fosters vocabulary learning since the words are

not presented in isolation. The next chapter presents the main constructs involved in this study

and discusses the previous findings related to CLIL, reading comprehension and graphic

organizers.

Chapter 2: Literature Review

2.1 Introduction

After the needs analysis, and as it was stated in the previous chapter, the population

chosen to implement this research project evidenced a lack of instruction on intensive reading,

nor use of reading strategies. For this reason, the strategy chosen to address the problem was the

use of graphic organizers (GOs), which are tools that enhance reading comprehension and

Content and Language Integrated Learning (CLIL)(Ogle & Blachowicz, 2002). The use of GOs

will contribute to enhancing learners' reading skills in English and they will be able to construct

their own knowledge by means of designing and analyzing these GOs as the result of reading a

text.

Thus, this chapter shows the definition and relevant information about each one of the

constructs related to this study (reading, graphic organizers, and CLIL). Additionally, in this

section, there is a discussion of previous studies related to this research project.

2.2 Theoretical framework

2.2.1   Reading

Although decoding is important in the reading process, reading involves more than the

use of decoding strategies; in fact, reading requires going beyond grammar structures and the

recognition of linguistic elements (Nunan, 1991). In this way, reading comprises not only a

written text to interpret but also different contextual aspects that surround it. This study aims to

enhance learners' reading comprehension by providing them with reading strategies and

fostering learning through the CLIL approach.

      Taking into consideration that reading is more than recognizing the linguistic forms and

decoding it is not the final purpose of reading, it should be noted that one of the main views of

reading is concerned with meaning, which involves a communicative bond between reader and

writer through a text (Nuttal, 1996). Moreover, it is necessary to highlight that effective reading

requires the reader to assume a critical process in which he or she transcends the text (M.

Wallace, 2004).

      Even though the aim of reading is getting meaning and being critical, or going beyond the

text, the process of reading differs according to the purpose and the reader's background

knowledge. It means that reading might be a very different experience for each reader (Alderson,

2000). Then teachers should promote reading strategies in their lessons, in order to benefit the

interaction between the reader and the text. This interaction consists of making sense of the text

and building knowledge using the readers' prior knowledge (Hedge, 2000).

2.2.1.1   *Reading Comprehension*

Reading comprehension emerges from the meaning constructed in the interaction

between the reader and the writer's words. The commonalities among them allow the interpreter

to anticipate and relate the message with his/her experiences, inferring meaning (Harris, Hodges,

and Association, 1995). This idea has been widely supported by the schema theory, which

establishes that the knowledge is based on the activation of a network (schemata) that is in our

brain built from all the experiences we have had (Alderson, 2000). Accordingly, teachers should

promote the implementation of strategies and tools that might improve knowledge and allow the

readers to make connections (C. Wallace, 1992). Thus, the reading comprehension strategies are

actions or decisions that the reader takes in order to make sense of a text, these strategies

determine the path the reader is taking in order to achieve the purpose of reading (Afflerbach,

Pearson, & Paris, 2008). Therefore, this research used graphic organizers as the reading strategy

to make explicit the connections among concepts and words, which is essential to activate the

schemata and infer meaning to enhance reading comprehension.

2.2.1.2   Intensive reading

There are different approaches to reading; they depend on the purpose of and the

methodology used. Intensive reading is one of those, this approach consists of extracting relevant

information from a text, and understanding its content (Al-Mahrooqi & Rahma, 2014). This

approach is used for academic purposes in most of the cases since it involves activities like

analysing; getting detailed meaning and main idea and details; developing reading skills and

enhancing vocabulary (Richards & Renandya, 2002).

The implementation of intensive reading entails certain strategies, activating prior

knowledge is essential, therefore pre-reading activities are indispensable in using this approach

taking into consideration that it is an important step to identify vocabulary. Intensive reading

uses skimming and scanning techniques because the reader needs to analyse the text in detail for

identifying main ideas, getting meaning and answering comprehension questions. Bearing in

mind that intensive reading is used for academic purposes one of the strategies used when reading are the GOs because these tools are useful to organize and summarize the ideas extracted from the text (Anderson, 2006).

2.2.2   Graphic organizers

Different approaches have supported the idea that the meaningful learning arises from relating the previous knowledge with the new one; promoting this relationship, it is possible to encourage the learners to be in charge of their own meaning making (Novak, 2010). The best way we store information in our minds is making connections to establish a network (Ausubel, 1968). Visual organizers allow the learners to find connections between the new information and their existing schemata because with the organization of the ideas they have a general perspective of the content or information they are reading. According to Bromley et al. (1995), "a graphic organizer is a visual representation of knowledge. The use of graphic organizers is also a good strategy to actively involve the students in their learning" (p. 6). Hall and Strangman (2004) defined a graphic organizer as follows "…a visual and graphic display that depicts the relationships between facts, terms, and or ideas within a learning task." (p. 1) Thus, the graphic organizers give the learners the opportunity to construct knowledge since they are extracting information from a text, then they analyze, compare, and contrast it to make connections with the content and with their previous knowledge as well.

Graphic organizers are tools that foster teaching and learning processes due to different reasons, Bromley (2008) suggests that "graphic organizers make visually explicit the

organizational patterns of a text" (p. 427). They are also a support and promote scaffolding in

different stages of the reading process (Bromley, 2008). These tools allow the negotiation of

meaning, are useful for assessing, and foster independent work (Bromley et al., 1995). It is also

argued that the use of graphic organizers enhances critical and creative thinking skills (Drapeau,

1998).

2.2.3   CLIL

Content and Language Integrated Learning (CLIL) is an approach that benefits both

content and language learning; according to Coyle, Hood, and Marsh (2010) CLIL is "an

educational approach in which various language-supportive methodologies are used which lead

dual-focused form of instruction where attention is given both to language and content" (p.3). In

a CLIL environment, a language different from the learner's mother tongue is used as a means of

instruction; this kind of environments are not typical language learning classrooms because of

the language, in this case, is not the subject but the medium to access the content (Dalton-Puffer,

2007). According to the methodology used in this approach, there are different models, which

correspond to the focus of the lessons. On the one hand, soft CLIL is a model in which some

topics are thought as part of the language lessons, this model is language- led. Therefore, the

focus of this model is language. On the other hand, hard CLIL is subject-led, in this model some

parts of the curriculum are taught in the target language, this model is focused on the content.

Hard CLIL can be modular or partial immersion which depends on the hours the subject is taught

in the target language (Bentley, 2010).

Although in CLIL approach there is no formal instruction related to language learning, language acquisition is a process that occurs naturally through the content that provides meaningful input (Dalton-Puffer, Nikula, and Smith, 2010). The focus of CLIL is based on content (it refers to the content subject is taught), cognition (the thinking skills involved in learning), language (the language as means and as purpose) and culture (awareness of self and others). The effectiveness of this approach is the result of some fundamental aspects such as the understanding of the content, the engagement in cognitive processing, the development of language skills and the development of intercultural understanding (Coyle et al., 2010).

2.3 State of the art

2.3.1   Previous Research

Although considerable research has been devoted to finding the impact of using graphic organizers in reading comprehension, little research has been done on the use of graphic organizers to fostering the learning of language and content in a reading context of L2 learners as the present study does.

Previous studies have found the effectiveness of using graphic organizers to assist reading comprehension and writing (Delrose, 2011; Mora, 2014; Nguyen, 2009). Some studies that focused on writing used graphic organizers as a pre-writing strategy (Servati, 2012; Tayib, 2013) since it allows the learners to organize the ideas they are going to write. Some other studies that focused on reading used the graphic organizers as while reading and post-reading strategies because they determined that during these stages it was possible to engage the learners in their

learning process and allow them to recall what they have read, as well as to make connections

among the elements of the text (Culbert, Flood, & Winder, 1998; Öztürk, 2012). These studies

supported the idea of using graphic organizers to enhance reading or writing when organizing

information, but they have not yet examined their effectiveness in Content and Language

Integrated Learning lessons.

With regard to the use of graphic organizers to improve reading comprehension in L1,

some studies are related to the literacy process (learning to read) (Bernhardt, 2010; Millet, 2000)

not to reading comprehension enhancement. Other studies also focused on the use of graphic

organizers to teach different subjects (Halvorson, 2010; McKown & Barnett, 2007). These

studies support the notion that graphic organizers help the learners to develop higher and lower

thinking skills proposed by Bloom (1984) as cited in (Wang, 2016), since the results of their use

leads to increase knowledge and comprehension and helped the learners to analyse the

information they read to create the graphics. Nevertheless, most of the studies in L1 related to

this strategy have been implemented in elementary school.

Previous studies have focused their attention on enhancing reading comprehension in L2

through the use of graphic organizers. They found that GOs allow learners to make connections

among the elements of a text by facilitating their comprehension (Mahecha, Urrego, & Lozano,

2009). Some of these studies focus their attention on the awareness of the text organization.

Others are more related to the comprehension of the text and using the organizer as a tool to

visualize the complete text (Jiang & Grabe, 2007; Llumiquinga, 2011). Some other recent studies

in reading in L2 analysed the impact that graphic organizers have on comprehension and text

summarization (Praveen & Premalatha, 2013; Roa Pinzón, 2011), how the learners construct

meaning from the text (Bustamante, 2014), and how effective they are to connect prior

knowledge to new one (Jiang, 2012). While these studies have focused their attention exclusively

on reading comprehension in language learning, they have not yet examined the possibility to

enhance reading using graphic organizers, taking advantage of their effectiveness to learn

content and enhance reading comprehension at the same time.

Other studies related to L2 reading have focused their attention on the use of reading

strategies in extensive reading comprehension in content-based lessons (Bogoya, 2011;

Darmawan, 2010; Reina, 2013). The researchers determined that when reading, it is important to

take into account the learners' prior knowledge; also, that the perception of the students about

reading changed as they found different enjoyable strategies, and finally that it is necessary to

provide the students with vocabulary related to the content they are going to read. They also

settled that the implementation time was not enough to see the scope of the studies because they

spent a lot of time training the students in the use of graphic organizers. The results indicated that

it is necessary to include meaningful activities with the purpose of developing thinking. It is also

important to use cooperative work and to employ scaffolding. To fill in the gaps of the studies

presented above, the current study only selected one reading strategy, the graphic organizers,

which enhance the ability to retrieve and recall information necessary to connect prior to new

knowledge, as some studies mentioned before have determined. However, it was necessary to

thoroughly plan the lessons for the implementation taking into account that instruction on

understanding how to use these tools is time-consuming. This study aims to use graphic

organizers as a tool to benefit the connections between previous knowledge and the new ideas to

profit meaningful learning (Bromley, 2008). Consequently, it was necessary to instruct the

learners to elicit the appropriate information from the texts they read and find those connections.

   Now turning to reading and CLIL, the study carried out by Cendoya and Adibin aimed at

finding how task-based and genre-based pedagogies could complement CLIL. The final

objective of the research was to enhance reading and writing skills. One of the findings of the

study was that through CLIL approach it is possible to foster any skill because the students learn

language naturally, as they learn their first language (Cendoya & Adibin, 2010). The study

focused on the CLIL approach. Although reading comprehension is one of the main skills

addressed in the research project, it is necessary to focus the attention just in one skill to see the

real impact of CLIL on the development of language learning and reading comprehension.

   A few studies have demonstrated that the use of graphic organizers benefits reading

comprehension skills of the students in a CLIL context (Goss, 2009; Skogen, 2013).

Nevertheless, these studies have focused only in one of the aspects (language or content),

providing good results in one of these aspects. Additionally, these studies have been

implemented with students whose L1 is English. To fill the gaps of the studies, the current study

purposefully will show the impact of using graphic organizers in terms of reading and content.

The studies also suggested the importance of providing the learners with training about how to

use the graphic organizers, which was an essential aspect to take into account in the planning of

the implementation stage.

2.4 Conclusion

The theories and studies presented above are the support to the relevance of this research. They provide this paper with theoretical aspects to consider. Through the development of this chapter, it can be observed how graphic organizers do benefit reading comprehension; on the other hand, the CLIL approach benefits the learning process by giving the learners the opportunity to learn L2 in the same way they learned their first language. According to the findings mentioned above the need to propose, a study emerges. A study aiming at providing students with opportunities to learn a foreign language and content, even more, a study, which addresses the needs of a population that does not belong to a bilingual context. Other studies have focused their attention on the use of graphic organizers to enhance reading comprehension but not in a CLIL context and less in a state institution.

Having argued the main constructs involved in this research project and previous studies related to this field, the next chapter will describe the research design and the instruments for data collection.

<div align="center">Chapter 3: Research Design</div>

3.1 Introduction

The existing literature on this topic illustrates the importance of providing learners with tools that help them to comprehend a text. Additionally, it was found that graphic organizers are great tools to help learners in the comprehension process. Different research studies have been developed about graphic organizers used to enhance reading or as a strategy in CLIL; nevertheless, a few studies have analyzed the use of these tools in reading in Content and language integrated learning and in institutions where there is not bilingual instruction.

In order to determine how the application of graphic organizers promotes the development of students' reading skills in CLIL, three instruments were designed to collect data: reading tests, a questionnaire, and a teacher's journal. They were piloted with a different group of learners and validated by some academics who belong to the educational field, like professors from the university. The purpose of the reading tests was to gather data that could provide evidence on how useful the GOs were; the questionnaire collected the students' perception about the use of graphic organizers and the teacher's journal was a support for the teacher to keep a systematic observation of the phenomena carried out during the implementation.

3.2 Type of study

This study was a small-scale qualitative action research project, which gave the teacher researcher the possibility to gain understanding of the situations and issues in her own teaching context (Stringer, 2013). The researcher observed and reflected upon a problem found in the development of the lessons which was faced following the phases of the research cycle:

planning(finding the problem), action (planning the methodology to solve the problem),

observation (systematic observation using instruments for collecting data) and reflection (reflect

and analyze the impact of the research) proposed by Kemmis and McTaggart (1988) as cited in

(Burns, 2010). This kind of research attends to find a problematic situation and to analyze it

deeply being immersed in the context of the observation. It benefits a natural observation and it

is also an opportunity to make a systematic reflection about the teaching and learning practices

(M. J. Wallace, 1998).

   This research project followed mixed methods procedures, which involve the recollection

and analysis of qualitative and quantitate data. The instruments gathered qualitative data.

Nevertheless, in the analysis it was necessary to add an instrument (a checklist to assess the

graphic organizers made in the reading tests) in order to refine the results and have quantitative

data that might converge with the information found in the questionnaire (See Appendix K:) and

in the teacher's journal (See Appendix F:). Therefore, the sequential explanatory strategy was

implemented. It consists of collecting qualitative data and analyze it in the first phase followed

by quantitative data collection and analysis. This strategy aims at providing validity to the

qualitative data using the quantitative information (Creswell, 2009).

 3.3 Context

   This study was carried out at a public school in Bogota, Colombia. This school teaches

kindergarten, primary and high school students, in three shifts. The school general aim focuses

on giving the learners tools to comprehend reading texts with critical thinking in order for them

to be autonomous and to develop the most important cognitive strategies such as planning and

goal setting, asking questions, making predictions and evaluating. Students from eighth to

eleventh grade are divided into English levels; nevertheless, most of them are levelled A1

learners (Council of Europe, 2001). The syllabus is based on the standards established by the

Ministry of Education of Colombia. Consequently, the learners attend 3 hours of English

instruction per week; although this project was implemented using the CLIL approach, teaching

other subjects in English is not part of the syllabus. Therefore, the soft CLIL model was used in

this research project, because the lessons were language- led. The learners start being part of the

"Astronomy Club" in this grade; therefore, the content included in the English lessons for the

implementation of this research project was astronomy. The groups attend one of the lessons in

the English classroom where they have access to tablets and sound devices; however, the internet

connection usually does not work.

3.3.1   Participants

This research project was implemented with a group of 36 students from ninth grade.

Their average age is 15. They are not used to read on a daily basis and they relate reading to

answering comprehension questions.

Regarding their cognitive needs, this group of learners requires more instruction to

improve their formulation in terms of oral communicative skills because they usually use English

only in written way, which evidences they lack instruction on speaking since they mentally plan

in Spanish before uttering any sentence in English or tend to write before speaking. Additionally,

this group of learners needs to improve their vocabulary because they tend to translate any single

word. A competent learner should pay more attention to the overall meaning of a word in a text (Bolitho, 1995). Consequently, these learners need to learn to infer meaning of words within a text without translating.

These students tend to be shy, they are afraid of making mistakes since others' opinion is very important to them. They are building their personality on their relationships. They are very respectful. These students are establishing strong bonds and trust among them, and friendship is very important to them. Additionally, the encouragement in the lessons is necessary for them, considering that they achieve what they want only when they find the motivation to do it.

This group of learners needs to be exposed to activities that develop their critical thinking skills. They also need to develop their long and short-term memory in order to relate vocabulary to different situations. On the other hand, it is important that they improve their abilities to analyze and to make inferences. According to Piaget (1983) "adolescents tend to become increasingly systematic in their problem solving" (as cited in Kenneth, Merrell, Gretchen and Gimpe, 1998, p. 35); in this way, it is essential to give the students the opportunity to develop reading comprehension by making reading a habit, using the graphic organizers as tools to achieve this aim.

3.3.2   Researcher's role

An action research investigator has a multitask role such as an observer, but is also part of the observed group. The researcher becomes a critical reader of the reality whose main function is monitoring the teaching and learning processes (Burns, 1999). In this study, the researcher was

a participant observer; she was the teacher and the researcher who was observing her own

teaching context. She was immersed in the learning stage that was the classroom, observing and

recording what was happening before, during and after the implementation of the strategy, which

aims at enhancing reading comprehension using graphic organizers. The researcher had the

opportunity to reflect upon her teaching practices and how to improve them as well.

3.3.3   Ethical considerations

Ethical considerations concern leading research in moral and responsible ways (Burns,

2010). One of the main concerns was to inform the participants about the type of research (action

research), its purpose and how it might affect the development of the lessons. To guarantee this,

two types of permission were considered: first, permission from the school board (See Appendix

A:); second, consent to inform and gain the students' participation (See Appendix B:). The first

letter's purpose was to have permission to develop this study in the institution; the second one

was essentially taken into account that the participants are under the age of 18 and need their

parents' approval to participate. In order to keep students' anonymity and confidentiality they

used nicknames and in the data analysis, a number was assigned to each one of them.

3.4 Data collection instruments

The data collection instruments were designed to gather information about the

participants' reading comprehension level when using graphic; to that end, a pre-test was

designed (See Appendix C:). In order to find the learners' perception about the use of graphic

organizers, they answered a questionnaire at the end of the implementation. The teacher used a

written journal where she registered the information related to what she observed and found

during the implementation. It was also a document where she could reflect upon the research

project and the impact of the proposal. These instruments allowed the researcher to identify and

validate the findings through the observation, taking into account the research problem and the

strategy used to solve it.

3.4.1   Descriptions and justifications

3.4.1.1   Reading tests

Information transfer techniques are a way of testing students reading comprehension

since they employ graphic organizers, maps, charts or tables in order to organize and summarize

the information from a text (Alderson, 2000). Reading tests should be meaningful and should

allow the learners to make connections (August, Francis, Hsu, & Snow, 2006). Consequently,

this study used information-transfer tests (See Appendix E:) which were designed by the teacher,

in these tests the students were asked to transfer the information they read into a graphic

organizer. These tools allow the learners to make connections between their prior and new

knowledge. In the tests design the pre-, while-, and post-reading stages were considered; in this

way, the reading tests included specific activities in each one of those stages. In terms of

assessment, the tests were part of a summative assessment, since the learners did not received

feedback. The organizers were used to assess students' performance in different skills using a

checklist that considered items related to reading comprehension, content learning and the

organizers use. Therefore, a test was taken before the pedagogical implementation to make a

diagnosis (See Appendix C:) and eight tests were administered during the pedagogical

intervention in order to find if there was any difference in terms of students' use of graphic

organizers, learning of new content and their language level.

3.4.1.2   *Questionnaires*

Questionnaires are methods of gathering data about people's opinion by asking them

questions (Fowler, 2014). This study used a questionnaire in order to know the perception the

participants had regarding the use of graphic organizers and the knowledge they had about the

use of them when reading. The questionnaire consisted of eight open-ended questions. These

questions asked about the use of graphic organizers while reading and how the learners felt using

them. This instrument was chosen because it is a tool that allows to gather the responses of many

people, provides direct answers and it is easy to complete (McKernan, 1996). Therefore, it was

an appropriate instrument to gather information about the implementation of this research project

learners' opinion, for this reason, the questionnaire was applied at the end of the implementation.

3.4.1.3   *Teacher's journal*

The collection of data is also supported by a teacher's journal where the teacher writes a

record of what happens in the classroom and his/ her reflections on the development of the

research project. Besides, in the teacher's journal, it is possible to do a post-lesson reflection

upon different facts related to the research topic, this happens in the classroom during the

implementation of the project (Burns, 1999). The teacher's journal was designed considering

three aspects to analyze in each one of the sessions: students' attitudes, effectiveness of the

graphic organizer and students' output; additionally, in the post-lesson reflection there was a

section to write different aspects to consider in the subsequent sessions. Although in the

teacher's journal the most important events of each lesson were registered, the focus of the

reflection was on the use of the graphic organizers to summarize, compare and contrast, and get

main idea and details, as well as reflect on how effective these tools were to organize the

information read. The researcher registered her observations in the teacher's journal after every

class, this instrument provided qualitative data that was contrasted with the data gathered in the

reading tests and the questionnaire in order to triangulate the results.

3.4.2 Validation and piloting

The instruments for collecting data were designed taking into account the needs' analysis

and the theoretical framework; the reading tests were designed using relevant information related

to the content the learners were going to learn (astronomy) (See section 3.3). The texts were

taken from different sources and the comprehension questions or activities were proposed by the

researcher. Additionally, the state of the art provided the researcher with arguments that made

her realize the importance of training the learners before the implementation in the use of graphic

organizers since some studies found the learners did not know how to use them to organize the

information they had read (See section 2.3).

The instruments were validated by the principle of content validity, which consists of an

expert opinion taking into account literature review (Brod, Tesler, & Christensen, 2009).

Consequently, these instruments were validated by the researcher's colleagues and the research

tutor who provided her with feedback that helped her to improve these instruments.

Regarding the piloting, the first test and the questionnaire were piloted with a different

group of learners; this helped the researcher to find errors in the way questions were proposed

and it increased the validity of the instruments (Burns, 1999). After the piloting the researcher

was aware of the importance of being more specific in the questionnaire because the questions

asked the learners about reading strategies in general terms, then the questionnaire was

redesigned taking into consideration this aspect; all of this, in order to achieve validity and

reliability in the data collection process. Regarding the reading tests, in the piloting was

noticeable the importance of introducing the vocabulary in the pre-reading stage because in this

way the learners could relate their previous knowledge and have a better understanding of the

text. Bearing in mind the previous aspects the piloting allowed the researcher to refine and

validate the instruments as well.

3.5 Conclusion

The findings from previous research (Bogoya, 2011; Darmawan, 2010; Reina, 2013)

provided methodological support for choosing the instruments for data collection and the

methodology to follow. This research project aims at determining the use of graphic organizers

in the development of students' reading skills in CLIL; therefore, the instruments used had the

purpose to collect the necessary data to provide validity and triangulate the information. The data

collected using these instruments were analyzed to answer the research question and achieve the

research objective.

In the subsequent chapter, the reader will find a detailed description of the pedagogical implementation as well as the visions of language, learning, and curriculum that support the pedagogical intervention. During this process, the strategy (graphic organizers) was applied to collect data that was analyzed in order to find the impact of this study.

Chapter 4: Pedagogical Intervention and Implementation

4.1 Introduction

This study is aimed at determining how the application of graphic organizers affects the

development of students' reading skills in CLIL. In order to achieve this objective, this chapter

contains the description of the pedagogical intervention and implementation as well as the

visions of language, learning, and curriculum, which support this study.

The pedagogical intervention and the implementation are based on CLIL building blocks

(Coyle, Hood, & Marsh, 2010) and conceptions of language learning and content from this

approach. Additionally, the reading process was developed following the learning stages

proposed by Feuerstein, Feuerstein, Falik, and Rand (2002): Input, elaboration, and output;

which also corresponded to the reading stages (pre-reading, during reading and post-reading).

4.2 Visions of language, learning, and curriculum

4.2.1   Vision of language

This study conceives language according to the CLIL approach, which proposes

connecting content learning and language learning. Taking into account this relationship (Mohan

and van Naerssen (1997) established some principles of language; "in the first place, language is

a matter of meaning as well as form; secondly, as we acquire new areas of knowledge, we

acquire new areas of language and meaning."(p.22). these ideas support the argument that

"language is a tool for gathering and sharing knowledge, language works as a means and as the

aim. This approach makes emphasis on the language use rather than language learning

explicitly" (Dalton-Puffer, 2007). In addition, Coyle et. al. (2010) proposed that language in

CLIL could be defined from three perspectives, which are interrelated:

Language of learning: is the language needed for learners to access basic concepts and

skills relating to the subject theme or topic.

Language for learning: is the kind of language needed to operate in a foreign language

environment. It is the language learners that need to understand and interact.

Language through learning: is the language the learners need to support and advance

their thinking processes.

Taking into consideration these perspectives of language the implementation of this

project was carried out using the language as mean of communication, and as the target

language.

4.2.2   Vision of learning

Learning is defined by Brown (2007) as follows: "acquiring or getting knowledge of a

subject or a skill by study, experience or instruction" (p. 7). Taking into account this point of

view learner's need exposure to language from the perspectives previously mentioned but they

also need to develop their thinking skills, which might be fostered by providing them with

learning experiences that should be meaningful. This idea is one of the foundations established in

the CLIL approach, which implies the active involvement of the learners in their own learning

process (Coyle et al., 2010).

Now turning to the use of graphic organizers to enhance reading comprehension and learning, these tools serve as aids for students' learning since GOs allow them to make connections between concepts and generate a framework for organizing understanding (Vasilecas et al., 2006). Consequently, the graphic organizers benefit meaningful learning since they are bridges that connect also new and omit prior knowledge, which is one of the characteristics proposed by Ausubel in this kind of learning (as cited in Brown, 2007).

In this aspect of learning, scaffolding plays an essential role because, in terms of CLIL, it is necessary for the teacher to offer support to the learners until they have enough tools or knowledge to work by themselves. Scaffolding could be promoted by giving the learners the possibility to become autonomous and through cooperative work as well (Sticher, 2010). Regarding this aspect, Coyle, Hood, and Marsh (2010) argue that "if dialogic learning takes place in a context where learners are encouraged to construct their own meanings from activities requiring interaction with peers and teacher in the vehicular language, then learners will need to be able to access language relating context" (p.35). Accordingly, the graphic organizers as stated before contribute to relate the context and connect prior and new knowledge, which benefit learning.

4.2.3   Vision of curriculum

The vision of curriculum in this study is based on the conception of the four building blocks that support CLIL approach. The curriculum is based on content (subject matter), communication (language learning and using), cognition (learning and thinking processes) and

culture (developing cultural understanding). Consequently, the objectives in the curriculum

design following this principle should benefit a focus on content, language, cognition and culture

(Coyle et al., 2010).

Taking into account that this study's aim is to determine the impact of graphic organizers

in reading comprehension in CLIL, it is necessary to highlight the importance of these tools in

the development of the curriculum. In the first place in terms of content, the graphic organizers

make the content easier to understand (Wills & Ellis, 2005). They allow the learners to make

connections between prior and new knowledge, and to organize the information, which also

contribute to the learning and thinking processes (cognition). Additionally, these tools also

promote vocabulary learning and provide a visual support of the content learnt which also fosters

language learning.

4.3 Instructional design

4.3.1   Lesson planning

The lesson planning was based on the model of learning that proposes three phases of

learning: input, elaboration, and output (Feuerstein et al., 2002). These stages were developed in

each lesson; each one of them corresponded to a stage of a reading lesson: pre-reading, during

reading and post-reading. Taking into account that this research project aimed at finding the

effectiveness of the graphic organizers in reading comprehension in a CLIL class, they were used

in the lessons as the main component of the during-reading stage; as pre-and post-reading

strategies other activities like brainstorm, watching a video, designing a poster, and describing

the graphic organizer were used. The lesson plans were designed as an adaptation of the ICELT

(In-Service Certificate in English Language Teaching) lesson plan template (See Appendix G:).

Additionally, the lesson plans included content, language and cognition aims taking into account

CLIL building blocks mentioned in the visions of curriculum (see section 4.2.3).

4.3.2   Implementation

The pedagogical implementation of this study was divided into 8 sessions. The learners

did reading tests (See Appendix E:) and then they were asked to create a graphic organizer in the

during-reading stage. In the first two lessons, the teacher proposed models of graphic organizers

(network tree, spider map, sequential map, compare-contrast matrix and series of event chain) as

a scaffolding strategy. In the subsequent lessons and after receiving instruction about organizing

the ideas to create the GOs, as part of the third lesson, the learners designed their own graphics

considering the models of graphic organizers they had seen in the previous lessons and

organizing the information from the text they read. This study was based on CLIL approach;

therefore, astronomy topics were organized into eight lessons; each one of the lessons focus on

one of the strategies (summarizing, comparing and contrasting, getting main idea and details)

(See Appendix H:). All the lesson plans designed for the implementation had the same format;

however, the pre-and post-reading activities were different. The pre-reading activities aimed at

activating previous knowledge and introducing the vocabulary that might contribute to have a

better comprehension. Nagy (1988) claims that "Intensive vocabulary instruction for

comprehension is needed to guarantee measurable gains because readers must possess in-depth

knowledge of a substantial portion of the words in a text before comprehension can proceed

smoothly." (p.36). The activities were different since it was necessary to introduce the

vocabulary before reading and they should not be boring and repetitive, additionally, there are

different resources that can be used for this purpose like videos and pictures. Then the learners

were asked to identify core vocabulary, make sense of the information, organize core ideas into

the graphic organizers and use them in a specific activity like a presentation, or the design of a

poster.

4.4 Conclusion

This chapter supported the notion established in CLIL approach about language, learning,

and curriculum as well as the use of graphic organizers in reading. The implementation process

allowed the learners to have a different perspective of English language learning since they have

not had the opportunity to learn content on this subject as they only had received instruction in

language learning. The process of implementation provided the data to analyze and determine the

impact of using graphic organizers to enhance reading in CLIL.

The data gathered were analyzed taking into account the grounded theory; following the

coding process (open and axial coding). Then, the analysis and mapping determined how the

categories related to each other to establish a theorization around the research question.

Chapter 5: Results and Data Analysis

5.1 Introduction

The pedagogical intervention and implementation, which was developed in 8 sessions, provided elements for data collection. In this process, the learners created graphic organizers using the information they had read which was about astronomy topics. The lessons were divided into three stages (pre, during and post reading). The graphic organizers were used as a while reading strategy.

The data collected throughout the intervention stage was analyzed taking into account the coding process. In the first part of this process, the data was reduced through the color coding strategy (highlighting relevant information). The results were refined with the axial coding (making connections among the categories found in the color-coding). Then, through the triangulation process, it was possible to connect the results obtained from the instruments (questionnaire, teacher's journal and the results from the reading tests) in order to determine the categories and concepts (Strauss & Corbin, 1990).

5.2 Data management procedures

The data collected from three instruments: reading tests, a questionnaire, and a teacher's journal were organized separately. In the first place, it was necessary to establish a way of assessing the reading tests, for such a purpose a checklist to assess the GOs was designed considering the problem and the constructs (See Appendix I:). The reading tests were filed in a physical folder and the checklist was an additional instrument, which helped to refine the results

from these tests; all this information was summarized in a chart (See Appendix J:). The

questionnaire was digitalized in an excel document as well as the teacher's journal (See

Appendix F:). The information gathered was organized into a matrix. In order to keep

participants' anonymity, a code was ascribed to each one of them (for example "S1, S2"). This

information is also found in the matrix.

5.2.1   Validation

In order to demonstrate accuracy in the findings, three strategies were used: data

transformation, the creation of a matrix and triangulation (Creswell, 2009). The reading tests

contained the GOs created by the students during the implementation of the project; in order to

assess these reading tests and more important, the graphic organizers, a checklist was created.

The results from the assessment of the graphic organizers using this instrument were transformed

into a chart (See Appendix J:). Additionally, a matrix was designed to collect all the information

gathered from the instruments, which facilitated the triangulation and analysis. Finally, the data

was triangulated by comparing and contrasting the information gathered from three instruments

(teacher's journal, reading tests (GOs) and questionnaire). By converging different sources of

data the researcher provides validity to the study (Creswell, 2009).

Another way of giving validity to this study was the sampling procedure. In the needs

analysis, 36 students participated but only 20 of them were selected at random to take part in the

implementation. This was appropriate because it provided enough information to find the

categories which ensures more precise findings (Morse, Barrett, Mayan, Olson, & Spiers, 2008).

5.2.2 Data analysis methodology

The data analysis was carried out taking into account the grounded theory method which is defined by Charmaz (2015) as follows "a comparative iterative and interactive method that provides a way to study empirical processes. It consists of flexible and interactive methodological strategies for building theories from inductive data" (p.54).

Using a quantitative method, it was possible to explain and summarize the results from the reading tests. These tests were assessed and the scores were showed in a chart, which produced quantitative data (See Appendix J:). It is one of the characteristics in mixed method studies: the data might be gathered in a qualitative form building quantitative data (Creswell & Plano Clark, 2011). Depending on the process of data collection, there are different strategies, which are applied also during the data analysis. Taking into account that this study expected to know how useful the graphic organizers were in reading comprehension in a content area, the quantitative data results were useful to assist in the interpretation of qualitative data since the assessment of the GOs was more accurate with the use of the checklist (Creswell, 2009). Thus, a sequential explanatory strategy was used in the data collection and in the data analysis as well. The process can be observed in Figure 1:
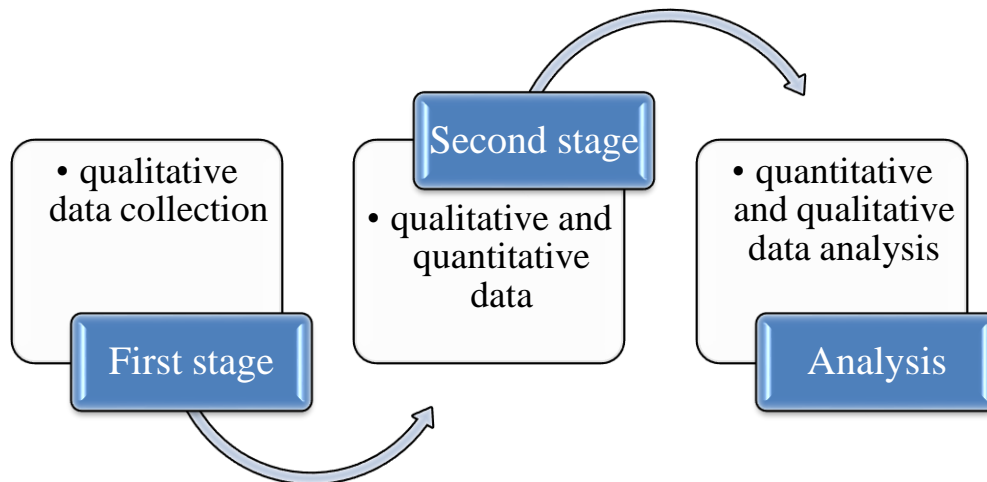
Figure 1. Sequential explanatory strategy used in the data collection and in the data analysis. Adapted from Research Design: Qualitative, Quantitative and Mixed Approaches (3rd Edition) (pg. 209), by J. W. Creswell, 2009, Thousand Oaks, CA. SAGE Publications. Copyright [2009] by SAGE Publications. Adapted with permission.

The sequential explanatory strategy started with a qualitative data collection through the instruments mentioned (See Appendix E:, Appendix F:, Appendix K:). In the second stage, in order to provide validity and assess the reading tests the data gathered from this instrument was quantified using a checklist (See Appendix I:) where two scores were used to assess the learners' performance (0 and 1, which correspond to no and yes). The results were organized into a chart to quantify them (See Appendix J:). Then, qualitative and quantitative data were analyzed and compared in the process of triangulation.

5.3 Categories

The coding process consists of making sense of the data gathered (Creswell, 2012). After refining the results, it is possible to establish categories, which lead to organize the information in order to get theories or concepts that will help to answer the research question. Thus, the

process of coding was made taking into consideration the levels set by Hahn (2008) open,

focused and axial coding, which will be defined below.

5.3.1   Overall category mapping

In the process of coding and getting categories, the open coding stage consisted of using

the color coding strategy; in this first step, it was possible to establish some initial categories that

provided the results displayed in Table 1.

Table 1.

Open coding (color-coding)

Teacher's journal	Reading tests	Questionnaire
Motivation	Main idea and details	Organization of the
Input	The information is well	Content
Vocabulary	organized	
Critical Thinking	Clear understanding of the	Comprehension
Organization of the information	content	Time consuming
Creativity	Creative design	Summarizing
Appropriate organizer	Sequence of the information	
Instruction	Grammar or spelling mistakes	Vocabulary
Subskill	Use of the appropriate GO	Asking for help
Aspects of reading	Information in a manner that is	Main idea and details
Language	easy to follow	
Content		Language
		Sequencing
		Creativity

This table illustrates the results of the first stage of the coding in the three instruments (teacher's journal, reading tests and questionnaire).

The second stage consisted of refining the data taking into account the research question; in this stage, the overlapping categories and the categories that were not related to the question or constructs were removed (Hahn, 2008).

Then, before finding the connection among the categories it was necessary to triangulate the information, or cross-validate the information gathered among the data sources (McMillan & Schumacher, 2001). The converging categories found in the three instruments provided a narrow vision of them; it was also useful before starting the axial coding. This process can be observed in Figure 2.
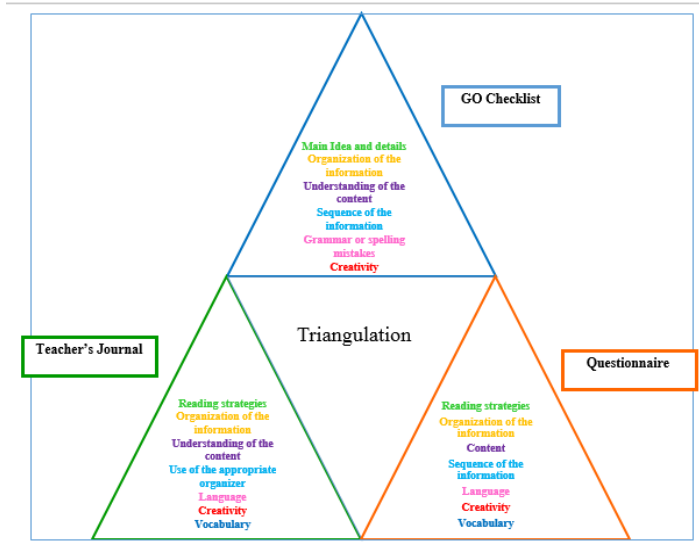
Figure 2. Triangulation. This figure illustrates the results yielded from the triangulation process; the colors illustrate the common elements found in the three instruments.

The axial coding involved making connections among the categories. This level of coding provides a general view of the results since it is possible to observe all the results as a whole (Strauss & Corbin, 1990). The relationship among the categories produced the map in Figure 3, where it is possible to find the connections among the categories found in the triangulation process:
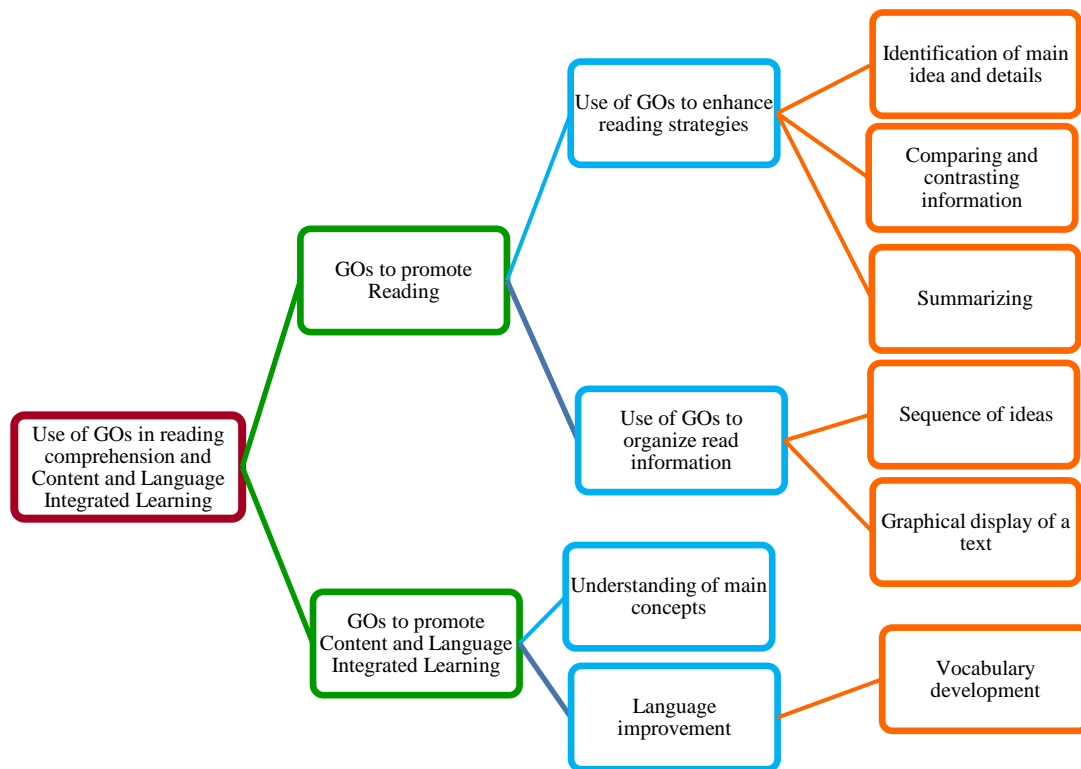
Figure 3. Category mapping. The figure illustrates the map where the categories found in the coding process were organized.

5.3.2   Discussion of categories

After connecting and analyzing the categories in the axial coding two main categories

emerged: *graphic organizers to promote reading* and *graphic organizers to promote content and*

language integrated learning. Within the category of *to promote reading*, two subcategories

were found: *the use of GOs to enhance reading strategies (identification of main idea and*

details, comparing and contrasting information and summarizing), and *the use of GOs to*

organize read information where *the sequence of ideas* and *the graphical display of a text* were

analyzed. Now turning to *graphic organizers to promote Content and language integrated*

learning the subcategories found are *Understanding of main concepts* and *Language*

improvement, both considered the vocabulary. These categories and subcategories were found in

the coding process after de triangulation of the instruments, they were common aspects found in

the analysis of data.

5.3.2.1   *Graphic organizers to promote reading*

The findings from the instruments showed that the learners improved their reading skills

by using the graphic organizers as it is shown in the following excerpt:

> *"Los mapas mentales me ayudaron a comprender mejor la lectura" (Student 1).*
> *"The graphic organizers helped me to understand better the reading" (Student 1)*

Figure 4. Excerpt 1 student's opinion. This figure contains one of the learners' answer to
the questionnaire.

This opinion taken from the questionnaire indicates that the learners found that using

graphic organizers they had improved their understanding of a text. This finding supports the

idea that the graphic organizers help the learners to comprehend and understand the general

meaning of a text and provide a deeper understanding of the content (Praveen & Premalatha,

2013).

Therefore, the data yielded by the reading tests provided a convincing evidence of the

learners' reading comprehension improvement. Figure 5 illustrates the average of students who

complied with seven over 10 aspects assessed per session. The aspects assessed were quantified

using two scores: 1 for those who complied with the assessed aspect and 0 for those who did not

complied, those results were summarized and each one of the students obtained a score that was

quantified to get the students average illustrated in Figure 5.
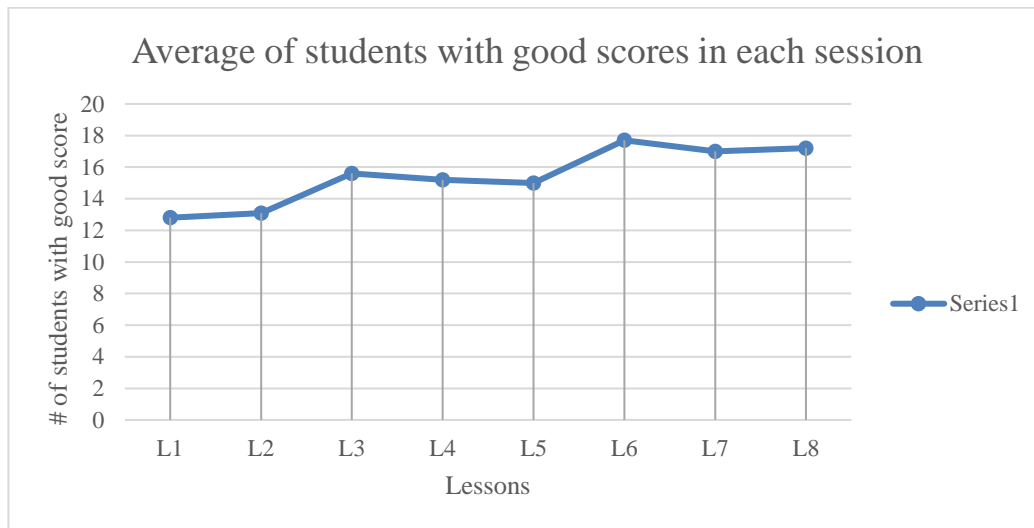
Figure 5: Students' average during the implementation. The graph shows the fluctuation in the number of students who complied with the aspects assessed, in a yes/no checklist type in reading comprehension over the course of the lessons.

The graph in Figure 4 indicates that the average of students who complied with the

aspects assessed in the checklist increased from lesson 1 to lesson 8. According to Hamilton

(2005) "graphic organizers help foster high-level thinking skills. They help the students identify

main idea and details in their reading" (p.1). The graphic organizers assisted the learners in the

formal use of reading strategies since they fulfilled different tasks that included the identification

of main idea and details, the comparison and contrast of information, as well as the ability to

summarize, fostering the cognitive component.

With graphic organizers, the learners were able to use different strategies, as they

analyzed the texts they were reading. They could organize the ideas they were going to

summarize in the graphic. The graphic organizer in figure 6 is a sample of one of the GOs

carried out by students. In this sample, the learner identified the main idea and supporting details,

the reading was about satellites and the task was transferring the information from the reading to

a GO, the learners could choose the model of graphic organizer that they preferred:
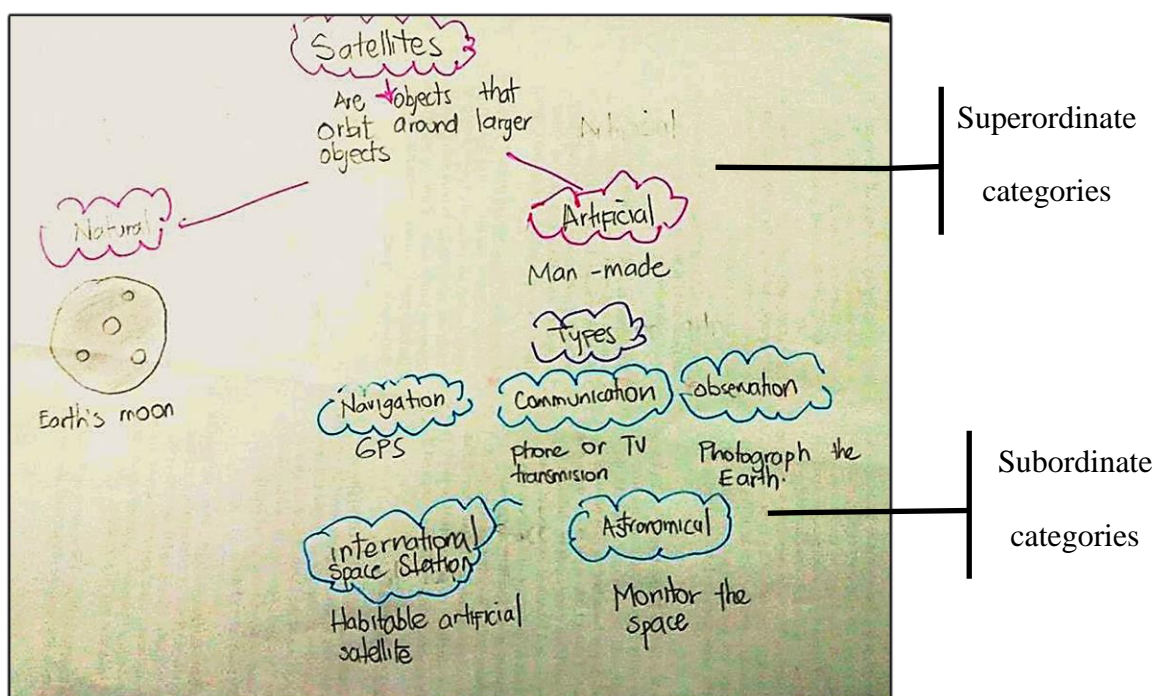
Figure 6: Student's GO about satellites. Hierarchal organization of the reading, concepts, and
sub-concepts were categorized using different colors.

With the use of the checklist, it was evident that the learner identified the main concept

from the reading and its definition and categorized the sub-concepts. In figure 6, it can be

observed that the learner made a distinction between superordinate and subordinate categories

using different colors, which implies that the learner made the process of finding commonalities

and differences among the concepts and how they should be organized in a hierarchal way

(Salkind, 2005). The student also found the relationship among the details establishing a

network. Accordingly, it was proved that graphic organizers allowed the learners to recall,

analyze and summarize the information read, which contributes to comprehend the content of the

text and the relationships between key ideas and thus, developing thinking skills (Hamilton,

2005).

The findings also revealed that the graphic organizers contributed to having a better

organization of key ideas, which involves different thinking skills. In the design of a graphic,

learners are required to make sense of the information they read; then they identify core

information and finally they make decisions about how to structure the information (Ellis, 2004).

Consequently, the organization of the information is a key aspect to take into account when

talking about graphic organizers. Figure 7 shows the students' performance on the organization

of the information in the reading tests. The figure illustrates the results from assessing the items

number 2 and 5 in the checklist (See Appendix I:) used to evaluate the graphic organizers (See

Appendix J:).
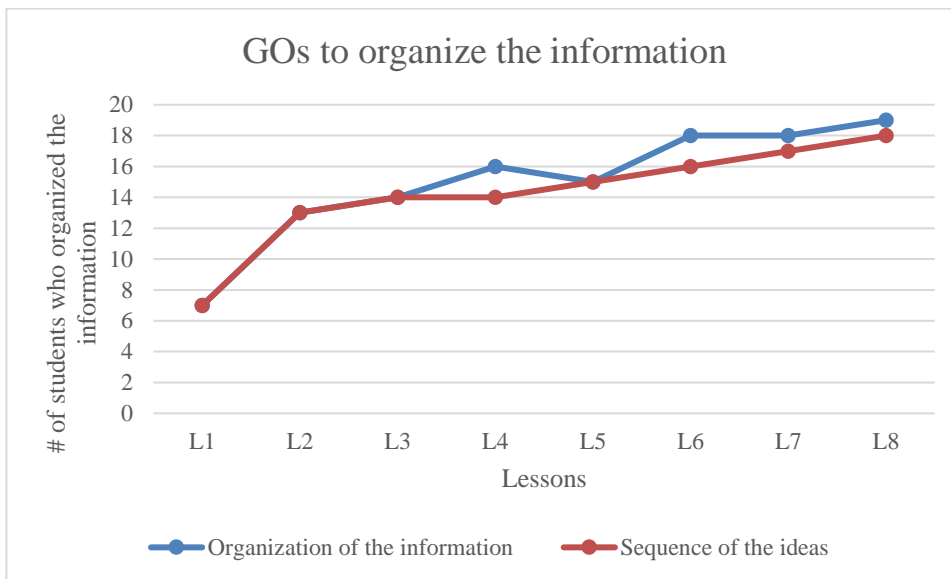
Figure 7: GOs to organize information and sequence ideas (Lesson 1 to 8). The graph shows the

number of students who performed satisfactorily on the reading tests, in the items "organize

information" and "sequence of ideas".

The vertical axis represents the number of students who achieved the task in terms of

organization of the information read, and the horizontal axis shows the lessons. The blue line

represents the organization of the information and the orange the sequence of ideas. In general,

the number of students who organized the graphic well increased from lesson 1 to lesson 8. In

the first lesson, only the 35% of the learners could organize the information appropriately. This

aspect was also mentioned in the questionnaire, as the following excerpt shows:

> *¿Has encontrado alguna dificultad en el trabajo con mapas conceptuales? Sí o No.*
> *¿Cuál?*
> *"Sí, es un poco difícil organizar toda la información correctamente." (Student 20).*
> *Have you had any difficulty working with graphic organizers? Yes or No. Which?*
> *"Yes, it is a bit difficult to organize all the information correctly" (Student 20)*

Figure 8: Excerpt 2 GOs difficulties (student perception). The figure shows a learner's
answer to a question from the questionnaire.

Although some of the learners had the perception that organizing the information to

create the graphic organizer was one of the most difficult aspects, they could overcome this

difficulty as it was observed in the Figure 8 according to one of the students' perception. The

improvement was observable not only in the number of students who achieved to organize the

information extracted from the text in the reading tests but in the observations analyzed in the

teacher's journal as well. Figures 9 and 10 show two of the graphic organizers designed by one

of the students:
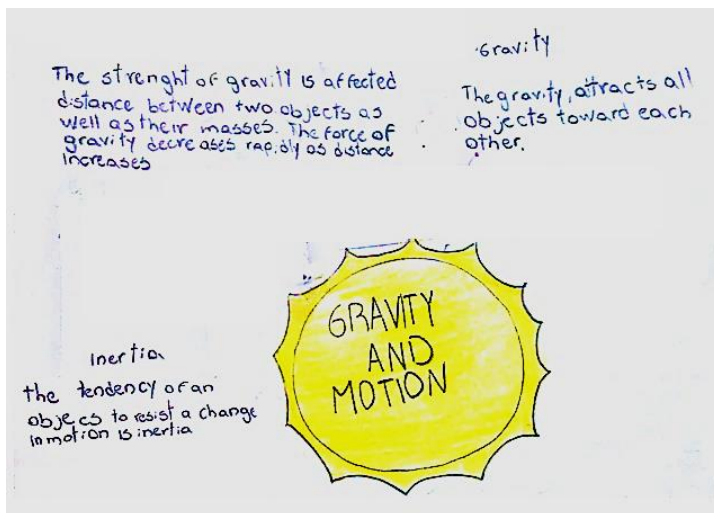
Figure 9: Student GO (2nd session). Graphic organizer about gravity and motion.
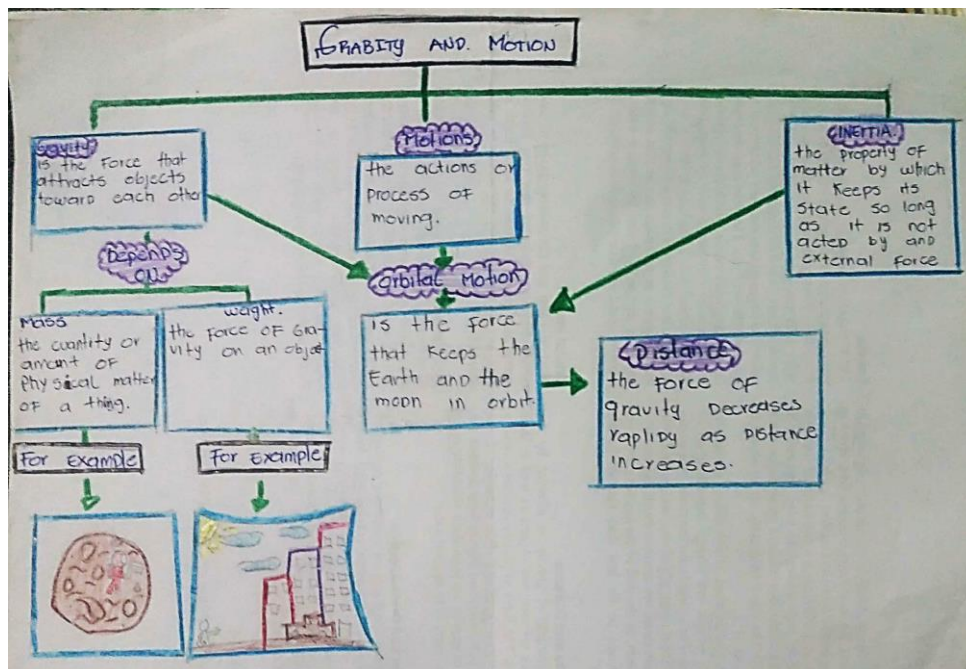
Figure 10: Student GO (8th session). Graphic organizer about gravity and motion.

The student was asked to create a graphic organizer about the second reading lesson at

the end of the implementation. The figures show both graphic organizers. In Figure 9, the learner

did not organize the content appropriately since there are not relationships established among the

ideas. In Figure 10, the student related the ideas and illustrated with drawings some of the

concepts from the graphic, which evidenced that the learner could organize the information

properly and provided a general image of the reading at the end of the process. One of the main

characteristics of graphic organizers is that they combine linguistic features (words, sentences)

and nonlinguistic symbols (arrows, drawings) to relate the elements (Marzano, Pickering, &

Pollock, 2001). Therefore, it can be observed in Figure 10 that the student was aware of the

importance of using arrows to illustrate the connection among the concepts taking into account

that she did not use them in the first GO as it is shown in Figure 9; besides, she used examples to

illustrate the information from the text as it can be observed in the second GO in Figure 10 where

she made drawings to exemplify the concepts of mass and weight. There was a significant

change, which evidenced learner's improvement in organizing the information read. The

comparison of these graphic organizers was made taking into account the previous aspects

mentioned and the items from the checklist.

The results indicated that the students used a different kind of graphic organizers, but

they also had the opportunity to be creative and to create not only graphic organizers but also

picture graphs which evidenced they comprehended the texts they read. Marzano, Pickering, and

Pollock (2001) state that "drawing pictures or pictographs to represent knowledge is a powerful

way to generate nonlinguistic representations in the mind" (p.82). Figure 11 illustrates that the

learner has a complete idea of the text she read:

Figure 11: student graph (Phases of the moon). The image illustrates the summary of the
reading text studied in session 3.

The figure suggests that the learner's intention was to show the summary of the text in a creative way, but it also suggests appropriation of the content. Graphic organizers enhance the identification of patterns and relationships between different concepts as well as to promote meaningful learning and more active thinking (Bin & Amin, 2004). By organizing the content creatively, the learner provided a general idea that summarized the reading and presented it in an understandable way for her and for the rest of the group.

5.3.2.2   Graphic organizers to promote Content and Language Integrated Learning

The findings revealed that the graphic organizers also enhanced Content and Language Integrated Learning. Casas (2010) states that "graphic organizers benefit students because these visual models give them control over the content they are learning as well as help to improve their comprehension" (p.220). Consequently, the use of GOs had a double impact; in the students reading comprehension and the learning of specific content (astronomy). CLIL approach aims at achieving dual objectives, learning content and language as well. This could be observed in one of the learner's answer (Figure 12) to a question related to this aspect:

> *¿Crees que aprendiste contenidos de otras asignaturas en inglés? Por ejemplo, ciencias en inglés. Sí o No. ¿Por qué?*
> *"Sí, porque aprendimos astronomía, y también inglés" (Student 11).*
> *Do you think you learnt other subject contents in English? For example, science in English. Yes or No. Why?*
> *Yes, because we learnt about astronomy and English as well. (Student 11)*

Figure 12: Excerpt 3 student's perception about CLIL. One of the learners' answer to a question in the questionnaire.

In this excerpt, the learner considers that the implementation helped him/her to learn astronomy and English. Throughout the process the learners used graphic organizers, these were the basis of the learning of the contents; thus, they were the main tool in achieving those goals. Using the GOs allowed the learners to have a better understanding of what they read since the use of these tools make the content more comprehensible (Colombo & Furbush, 2009).

CLIL approach was selected because it benefits meaning-focused processing through activities that involve learners in constructing meaning. The graphic organizers facilitate meaning-focused processing through the assignment of tasks that involve learners in inferring meaning, checking for accuracy, and providing support and feedback if the meaning has been insufficiently understood (Pinkley, 1994).

In addition, the CLIL approach promotes vocabulary development since it involves active processing of new words and recalling, hence repeated exposure to target words increases vocabulary (Xanthou, 2010). The data shows that the learners improved in terms of vocabulary from the first to the last lesson. In Figure 13, it is possible to observe two of the students reading

tests; the first one was implemented at the beginning of the process, the second one almost at the

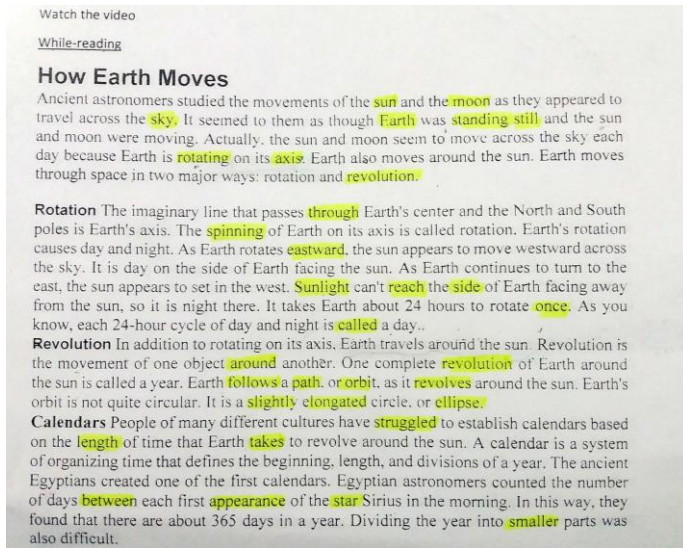end of the implementation:

Figure 13: Unknown vocabulary 1st session. The figure shows one of the students' unknown words underlined in the first reading test.
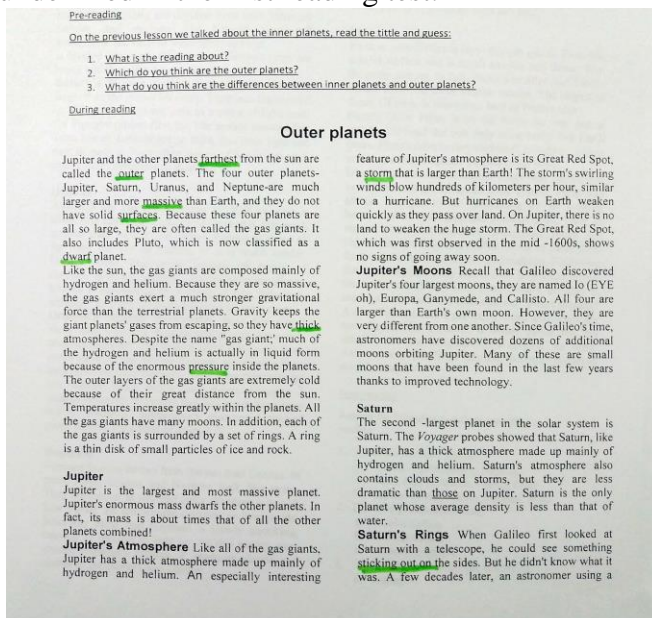

Figure 14: Unknown vocabulary 5th session. The figure illustrates the same student unknown words underlined in the first reading test at the end of the implementation.

The figure shows the learner's improvement in vocabulary. The students were asked to underline or highlight the unknown words in each one of the lessons. Comparing these two images, it is possible to observe that the learner highlighted more words in the first one than in the other one. Although the words were not the same, some of them were studied in previous lessons. The number of words was almost the same. It evidences that some words were more familiar to the learner. As it was said before, CLIL methodology benefits the acquisition of vocabulary because the learners are exposed to related words, which makes the students' learning easier. Underlining unknown vocabulary was one of the pre-reading activities that the learners did in most of the lessons, and then the learners were asked to include those words in the GO they designed, in this way; they could relate new and prior vocabulary. It was also observed and reported in the teacher's journal (See Figure 15):

> *It has been observed that they have had a better understanding of the texts because they identify and relate the vocabulary*
>
> *The learners have learned some vocabulary then each day is easier for them to understand what they are reading. Since they are recognizing familiar words from previous readings.*

Figure 15: Excerpt 4. Teacher's journal excerpt. Teacher's perception about vocabulary and understanding.

According to this excerpt, the learners are more familiar with the vocabulary, which determined that they improved. The readings were about astronomy field, which facilitated the process of vocabulary development. The frequency of exposure to target words is a decisive aspect in increasing the lexicon (You, 2011). The learners were exposed to similar words each

one of the lessons, they were learning new words and were recalling vocabulary from previous

lessons, which enhanced vocabulary improvement and evidenced that they were relating prior

knowledge to what they were learning, this connection between new and prior knowledge was

done through the GOs that were the tool to link and to organize the ideas.

5.3.3   Core category

After the analysis of the categories and subcategories found in the coding process, the

next step was to determine the core category. According to Corbin and Strauss (2008) the core

category "represents the main theme of the research" (p. 104). Then, the central category for this

study is: *Graphic organizers promote students 'reading skills as they make the content*

comprehensible. Through the description of the categories, it was observed that the tool used in

the implementation of the project in order to enhance reading comprehension and CLIL were the

GOs, which had a double purpose promote reading and content learning. The GOs improve the

learners' reading comprehension skills and help them to classify the content into small

comprehensible units to have a deeper understanding (Praveen & Premalatha, 2013).

According to Jiang and Grabe (2007) "graphic organizers can facilitate the

comprehension and retention of content area reading material" (p.42). The use of GOs promoted

reading comprehension and Content and language integrated learning. In terms of reading, it was

found that the graphic organizers enhanced reading strategies since they helped the learners to

identify main idea and details, compare and contrast information and summarize. Additionally,

the graphic organizers were useful for the learners to organize the information they have read

and to have a graphical display of the texts.

After the data analysis, the results determined that the graphic organizers promoted

Content and language integrated learning since they evidenced that they have helped the students

to have a better understanding of the main concepts and to expand their vocabulary in English.

The use of graphic organizers contributed to enhance reading strategies and foster content

learning since they allowed the learners to make connections among different concepts, making

them construct their knowledge.

5.4 Conclusion

To sum up, the data analysis determined how the use of graphic organizers enhanced

reading comprehension and content learning since they helped the learners to understand better

what they read and learn a content as well. Additionally, the study provided evidence of the

learners' improvement in terms of content learning and vocabulary development in English.

Moreover, the implementation of CLIL instructional approach was a challenge to the learners

since they had not received this kind of instruction before; nevertheless, the use of graphic

organizers and the pre- and post- reading activities were decisive in the development of this

research project; as they scaffolded the learning process.

In chapter 6, the reader will find the pedagogical implications of the results found in the

data analysis, and the possible impact of this research project as well. Though there were some

limitations, the main aim of the research was achieved. There are certain aspects to improve, like

the design of instruments for data collection and the time that was not enough to have a better

impact on the learners' studying habits or reading strategies.

Chapter 6: Conclusions and Pedagogical Implications

6.1 Introduction

The purpose of this study was to use graphic organizers as a strategy to promote reading comprehension and content learning (see section 1.3). Most of the teachers know the importance that reading has in education; even learners notice how essential reading is in their academic development. Nevertheless, it has been found that in some cases learners lack appropriate instruction on reading and strategies for improvement (Ballou, 2012; Okanlawon, 2011); additionally, reading different texts in isolation does not help the learners to construct meaning and to promote learning (Bean, Baldwin, & Readence, 2011; Cooper, Robinson, Slansky, & Kiger, 2016).

This chapter describes the findings yielded from data collection and their significance. It also makes a reflection on the pedagogical implications, limitations and further research. Bearing in mind the importance that reading skill has in students' learning, this study provided them with tools to have a better comprehension of the texts they read and enhanced content learning. This had great significance for not only in the way they were taught how to read but also for the process of learning a content subject in the English lessons.

6.2 Comparison of results with previous studies' results

Some studies mentioned in chapter 2, found similar results regarding the use of graphic organizers to assist reading comprehension (Delrose, 2011; Mora, 2014; Nguyen, 2009) since they are useful tools to organize ideas.

As it was found in some studies (Culbert, Flood, & Winder, 1998; Öztürk, 2012) GOs are very valuable tools to be implemented in the while and after reading stages of a lesson, as they are a good strategy to recall the information read and to find the relationships among concepts. However, these studies did not examine the effectiveness of using GOs in Content and language integrated learning lessons. Consequently, this study found them very useful to organize the information elicited from a text after reading it, since they summarize the ideas and offer a graphical display of the reading. Their use contributed to constructing students' knowledge and made the content learning easier for them.

Some studies have proved that graphic organizers develop higher and lower thinking skills when being used to teach reading in L1(Bernhardt, 2010; McKown & Barnett, 2007; Millet, 2000). They also found that the use of graphic organizers enhances thinking skills in L1 instruction because they promote meaningful learning as they relate prior with new knowledge. Although these studies were made with English native speakers, the findings in the present study in L2 instruction were similar since they revealed that GOs required the learners not only to decode a text but to analyze the information; evaluate the relevant content from the reading; and create and organize the ideas in the graphic organizer as well, which made them relate prior with new knowledge.

Some studies focused their attention on the use of GOs in reading comprehension in L2 finding that they benefit comprehension (Mahecha, Urrego, & Lozano, 2009). Additionally, they are useful tools to have a graphical display of a text (Llumiquinga, 2011). GOs are also very useful in text summarization (Praveen & Premalatha, 2013; Roa Pinzón, 2011); and they have a

great value to connect prior and new knowledge (Jiang, 2012). These studies converge with this

research because similar results were found. The students' answers on the questionnaire and the

results from the reading tests revealed that they used the GOs to summarize and have a general

view of the texts they read. Additionally, it was also found that graphic organizers not only have

an impact on reading comprehension but in content learning as well, which had not been taken

into consideration by previous studies. The graphic organizers because of the reading tests

demonstrated that in most of the cases the learners understood the main idea of the texts they

read which evidenced that the organizer helped them to learn the content.

There are no significant results related to the importance of graphic organizers in relating

prior knowledge with the contents the students were learning in previous studies (Bogoya, 2011;

Darmawan, 2010; Reina, 2013). However, this study considers it was a key element in the

development of the lessons since the pre-reading activities aimed at activating previous

knowledge and providing or recalling useful vocabulary in order to enhance comprehension

which also promoted content learning, an aspect that has not been considered in these previous

studies.

Now turning to the use of graphic organizers in CLIL, only a few studies have been

carried out and they were implemented to learners whose L1 is English (Cendoya & Adibin,

2010; Goss, 2009). The findings from these studies demonstrated that the GOs were useful tools

to organize texts related to a specific content (science) and that they helped the learners to

understand the main concepts of a text. These studies focused their attention on language or

content learning but they did not study a specific skill; while the present research project made

emphasis on the use of graphic organizers in reading comprehension in a CLIL context; findings in this study confirm that the graphic organizers benefit reading comprehension and content learning at the same time in L2 instruction.

6.3 Significance of the results

This study provided further evidence for using graphic organizers to enhance reading comprehension, Content, and Language Integrated Learning in learners whose L1 is not English. The findings reinforced the theory that GOs promote meaningful learning and enhance lower and higher thinking skills. Additionally, they are useful tools for organizing the ideas after reading since they allow the students to summarize a text and comprehend it to construct knowledge.

It is significantly important to highlight that the project was implemented in a state institution where the CLIL approach is not used because the second language instruction is limited to teaching skills without teaching any content. This methodology is more common in private institutions where the learners are exposed from 10 to 20 hours per week to English instruction including bilingual education (science, math, social studies). Meanwhile, the state institutions only devote 3 hours of instruction per week. One of the characteristics to promote CLIL is that language has a double function; it is the subject to learn and the mean to communicate, and that it is based on subject matter (McDougald, 2009). Although the state institutions do not comply with the requirement of using a subject matter, this research project brought the learners closer to this methodology.

Results so far have been very encouraging, since the learners' perception of the methodology is positive. They were engaged and had a better acquisition of the vocabulary since

it was related to the same subject or topic, which benefited students' retention. It could also be

encouraging to teachers because it is a different way of teaching; the learners learn content and

improve their reading skill at the same time.

6.4 Pedagogical challenges and recommendations

Although the implementation of the graphic organizers had a positive impact on the

students' reading comprehension and content learning, there are some aspects, which deserve

deeper attention:

Firstly, the work with graphic organizers requires having enough implementation time in

order to have the expected results, at least 12 lessons are necessary to obtain better outcomes.

Even though the learners used the graphic organizers in the lessons, they did not have the habit to

use them in other subjects or as a studying technique. The design of graphic organizers is time

consuming. In the first lessons, the learners took a lot of time and sometimes they did not have

the time to finish or to be active participants in the post-reading activities. In order to optimize

the time, the learners require additional previous instruction in designing the graphic organizers

and extracting relevant information to create them, considering that this research project aimed at

using the graphic organizers in enhancing reading comprehension and learning a content, the

students only had two sessions of instruction on how to organize the ideas in a GO.

Another challenge was the vocabulary as it was new for the students; thus, it was difficult

to them not to use the dictionary since they used to do it in their English lessons. However,

lesson by lesson, the learners remembered some of the words and it was easier for them to

comprehend and to notice they could infer the meaning of some words without using the

dictionary. The pre-reading activities are essential to activate students' previous knowledge because they need exposure to the language they will face in the reading.

The implementation of the CLIL approach was challenging at the beginning since the learners did not have enough vocabulary to face the readings. Besides, they were accustomed to having other kind of English lessons, which do not require them to go beyond the decoding process in order to answer some comprehension questions. However, as they were more familiar with the methodology, activities, graphic organizers and vocabulary, this perception changed.

6.5 Research limitations on the present study

The research process requires some principles, which go beyond being immersed in the context and observe what is happening. This process entails knowledge about data collection instruments, data analysis procedures and how to manage the information gathered to produce significant results. One of the major limitations of this research was the lack of experience in designing effective instruments that would gather the necessary and relevant information; in other words, in the development of the research process it was noticeable that other instruments might have been more suitable for data collection in this specific study, for example, more appropriate instruments to gather data related to language improvement. Thus, the data collection and the coding process would be done simultaneously since it might benefit the constant construction of appropriate data collection instruments, under these circumstances the researcher could have the opportunity of choosing and refining the instruments according to the needs of the study.

Besides the time was also a limitation because it was not enough. This research might have had better and more precise results having the time to observe and analyze more lessons, as it was stated before, at least four more sessions might have helped to see deeper results. It would also benefit the learners' studying techniques because the use of GOs as a post-reading tool would become a habit. Additionally, there would be an instrument to analyze the final products of the lessons in order to study the impact of the study in other skills like reading and writing.

6.6 Further research

This study used the graphic organizers to encourage CLIL. The specific subject was astronomy. Future work should focus on enhancing learning in other content subjects or to work in a cross-curricular project that might benefit other subjects and language learning since CLIL approach is not commonly implemented in state institutions because the time is not enough or the teachers do not have enough instruction; therefore, further work needs to be done to stablish the impact of soft CLIL in this kind of contexts.

For future research, it would also be appealing to do a deeper analysis of the post-reading activities in order to better know the use of graphic organizers in the development of language. Considering that one of the limitations of this study was the scarce evidence of language learning improvement, the final tasks from each lesson would be analyzed to determine the impact of graphic organizers not only in the skill of organizing information to learn but also in other skills like speaking or writing.

6.7 Conclusion

As teachers, we try to improve the learning context, providing the learners with tools that benefit their learning process or that make it easier to them. Accordingly, it is essential to help those finding strategies to improve their comprehension. This study analyzed the impact of using graphic organizers on reading comprehension and CLIL. After the implementation and data analysis, it was found that the GOs promoted reading comprehension and developed reading strategies, and enhanced Content and Language Integrated Learning. These tools allowed the learners to analyze the texts, to select important information and to organize the content developing lower and higher thinking skills to construct knowledge. They also fostered meaningful learning by making the learners relate concepts, and construct meaning and knowledge.

These findings contributed to the learners' learning process since they started using the GOs as a learning and studying strategy after finding, they were useful to summarize and to understand better a text, as well as to relate new and previous knowledge. In brief, GOs are an effective tool to organize the read information, which contributes to develop reading skills and learning a content. Taking into consideration the limitations of this study, the impact of using GOs as a post-reading strategy should be considered in further research and should be analyzed in detail in order to determine how useful they are in language development. This research project has lead us to conclude that the use of this specific strategy and approach encouraged the teaching process allowing the teacher to propose a methodology that could promote the learning

process, enhancing the pedagogical purpose of being a guide to find the way to construct

knowledge.

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Appendix A: Consent letters (Principal)

Bogotá, Abril 16 de 2015

Señora

Esperanza Gómez Angarita

Rectora IED Sierra Morena

Reciba un cordial saludo, yo Judith Carolina Gómez Patiño docente de inglés de la jornada mañana, de la institución IED Sierra Morena, solicito permiso para llevar a cabo una investigación, con los estudiantes del grado noveno, jornada mañana. La investigación espera contribuir al mejoramiento de las habilidades de los estudiantes para la adquisición de la segunda lengua (Inglés), así mismo se busca incrementar la motivación y fortalecer la habilidad de lectura en inglés usando organizadores gráficos; esta investigación es de carácter académico requerimiento de la maestría que curso actualmente en la Universidad de la Sabana.

Cabe aclarar que los datos recogidos, el análisis de los mismos y resultados son confidenciales y de carácter exclusivamente académico. Guardando la confidencialidad y privacidad de cada uno de los participantes en dicha investigación.

Agradezco la atención y colaboración prestada.

Judith Carolina Gómez Patiño

Docente Inglés Jornada Mañana

Appendix B: Students' consent letter

Bogotá, D. C. Abril 17 de 2015

Señores:

Grado 9°

Colegio Sierra Morena IED

Ciudad

Apreciados padres de familia y estudiantes:

Actualmente llevo a cabo una investigación en "Using Graphic Organizers to improve Reading in CLIL" dirigida a los estudiantes de educación media. Esta indagación intenta enriquecer los procesos de aprendizaje de la lengua extranjera y mejorar las prácticas docentes. Asimismo, se busca contribuir al mejoramiento del desempeño en el área de ciencias.

Cabe anotar que dicha investigación hace parte de mi trabajo de grado de la Maestría en Didáctica del Inglés con Énfasis en Ambientes Autónomos de la Universidad de la Sabana.

Por lo anterior, comedidamente solicito su consentimiento y colaboración para realizar mi propuesta de investigación, que se llevará a cabo durante el transcurso de este año escolar. Esto implica recolectar datos por medio de cuestionarios, diagnósticos, grabaciones de audio e imagen, encuestas, cuestionarios entre otras, las cuales serán desarrolladas por los estudiantes participantes.

Igualmente, a los participantes se les garantizará el uso de nombres ficticios para mantener su identidad en el anonimato, así como estricta confidencialidad con la información que se recolecte. La participación en esta investigación es voluntaria por lo cual el estudiante podrá retirarse en cualquier momento si así lo desea. El proyecto no tendrá incidencia en la valoración de la asignatura.

Agradezco de antemano su valioso aporte para llevar a buen término mi investigación. Como muestra de su aceptación a esta solicitud, favor firmar esta con número de cédula

Cordialmente,

_____

Judith Carolina Gómez Patiño

Docente de Inglés

Firma del acudiente: _____

CC._____ de _____

Firma del participante: _____

Appendix C: Reading pre-test

UNIVERSIDAD DE LA SABANA
MASTER IN ENGLISH LANGUAGE TEACHING-
AUTONOMOUS LEARNING ENVIRONMENTS
ACTION RESEARCH PROJECT

Sierra Morena IED

Name or nickname: _____ Group: _____

Pre-reading

Do you know what the model of our solar system is? What is the location of the Earth in the Solar System?
Match:

| a. Sun | b. Ellipse | c. Stars | d. Telescope | e. Earth |

About our Solar System

When the ancient Greeks watched the stars move across the sky, they noticed that the patterns of the stars didn't change. Although the stars seemed to move, they stayed in the same position relative to one another. These patterns of stars, called constellations, kept the same shapes from night to night and from year to year. The Greeks thought that Earth was inside a rotating dome called a celestial sphere. Since the word *geo* is the Greek word for Earth, an Earth-centered explanation is known as a geocentric system. In a geocentric system, Earth is at the center of the revolving planets and stars. About A.D. 140, the Greek astronomer Ptolemy further developed the geocentric model. Like the earlier Greeks, Ptolemy thought Earth was at the center of a system of planets and stars. In Ptolemy's model, however, the planets moved on small circles that moved on bigger circles.

Not everybody believed in the geocentric system. An ancient Greek scientist developed another explanation for the motion of the planets. This sun-centered model is called a heliocentric (hee lee oh SEN trik) system. *Helios* is Greek for "sun." In a heliocentric system, Earth and the other planets revolve around the sun. This model was not well received in ancient times, however, because people could not accept that Earth is not at the center of the universe. In 1543, the Polish astronomer Nicolaus Copernicus further developed the heliocentric model. Copernicus was able to work out the arrangement of the known planets and how they move around the sun. Copernicus's theory would eventually revolutionize the science of astronomy. But at first, many people were unwilling to accept his theory. They needed more evidence to be convinced. In the 1500s and early 1600s, most people still believed in the geocentric model.

Galileo used the newly invented telescope to make discoveries that supported the heliocentric model. For example, in 1610, Galileo used a telescope to discover four moons revolving around Jupiter. The motion of these moons proved that not everything in the sky revolves around Earth system. Galileo knew that Venus is always seen near the sun. He discovered that

Venus goes through a series of phases similar to those of Earth's moon. But Venus would not have a full set of phases if it circled around Earth. Therefore, Galileo reasoned, the geocentric model must be incorrect. In the late 1500s, Tycho Brahe made more accurate observations of the planets' orbits. Johannes Kepler analyzed Brahe's data. Kepler found that the orbit of each planet is an ellipse. An ellipse is an oval shape, which may be elongated or nearly circular. Kepler used the new scientific evidence gathered by Brahe to disprove the long-held belief that the planets moved in perfect circles. Since Galileo's time, our knowledge of the solar system has increased.

Comprehension questions:

1. The following picture belongs to:
   a. The heliocentric model
   b. The scientific model
   c. The geocentric model
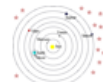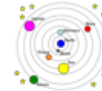
2. The following picture belongs to:
   a. The heliocentric model
   b. The scientific model
   c. The geocentric model

3. Circle the differences between geocentric and heliocentric models
   a. In the geocentric model the Earth is at the center of the revolving planets and stars.
   b. In the heliocentric model the Sun and the planets revolve around the Earth.
   c. In the geocentric model the Sun is at the center of the revolving planets and stars.
   d. In the heliocentric model Earth and the other planets revolve around the sun.

4. How was Copernicus' model of the universe different from Ptolemy's model?
   a. In Ptolemy's model the Sun was at the center of the system and in Copernicus' model the Earth was at the center of a system.
   b. In Copernicus' model the planets revolve around the sun and in Ptolemy's model the Earth was at the center of a system.
   c. In Copernicus' model the sun revolves around the Earth and in Ptolemy's model the Earth was at the center of the system.

5. What discovery by Galileo support the heliocentric model?
   a. He found that not everything in the sky revolves around the Earth system.
   b. He discovered that Jupiter had four moons.
   c. He found that there were moons revolving Jupiter which demonstrated that not everything in the sky revolved around the Earth.

6. What did Kepler discover?
   a. He found that the orbit of each planet is a circle.
   b. He found that each circle is a planet.
   c. He found that he orbit of each planet is an ellipse.

Appendix D: Questionnaire needs analysis

UNIVERSIDAD DE LA SABANA
MASTER IN ENGLISH LANGUAGE TEACHING-
AUTONOMOUS LEARNING ENVIRONMENTS
ACTION RESEARCH PROJECT
Colegio Sierra Morena IED

Nombre/Seudónimo: _____

Curso: _____Género: M___ F___   Edad: _____

1. **¿Te gusta leer textos en inglés?**

a. Sí

b. No

2. **¿Con qué frecuencia lees textos en inglés?**

a. Nunca

b. 1 o 2 veces a la semana

c. 3 o 4 veces a la semana

d. A diario

3. **¿Con qué intención lees textos en inglés?**

a. Por interés personal

b. Por cumplir con obligaciones académicas

4. **¿Qué estrategias usas para comprender un texto en inglés?**

_____

_____

5. **¿Cuál es la mayor dificultad que encuentras al momento de leer un texto en inglés?**

_____

_____

6. **¿Crees que es posible aprender una lengua extranjera y a la vez aprender**

contenidos de ciencias?

a. Completamente de acuerdo

b. De acuerdo

c. En desacuerdo

d. Completamente en desacuerdo

Appendix E: Reading tests

UNIVERSIDAD DE LA SABANA
MASTER IN ENGLISH LANGUAGE TEACHING-AUTONOMOUS LEARNING ENVIRONMENTS
ACTION RESEARCH PROJECT

Sierra Morena IED

Name or nickname: _____ Group: _____

Pre-reading

Watch the video and answer the following questions:

1. What kind of object is the sun?
   a. A planet
   b. A satellite
   c. A star

2. What is the sun made of?
   a. Hydrogen gas
   b. Mass
   c. Fire

3. In the core of the sun...
   a. It's hydrogen
   b. It's a searing of 15 million degrees Celsius
   c. It's hot

4. The sun converts hydrogen into...
   a. Oxygen
   b. Hydrogen
   c. helium

5. the photosphere is also called ...
   a. the sphere of light
   b. the sphere layer
   c. the sun's layer

6. the corona is like...
   a. the sun's inner layer
   b. the sun's atmosphere
   c. the sun's layer

While-reading

Organize the information from the text in a mind map

The Sun

Unlike Earth, the sun does not have a solid surface. Rather, the sun is a ball of glowing gas through and through. About three fourths of the sun's mass is hydrogen and one fourth is helium. There are also small amounts of other elements. Like Earth, the sun has an interior and an atmosphere. The sun's interior consists of the core, the radiation zone, and the convection zone.

The Core The sun produces an enormous amount of energy in its core, or central region. This energy is not produced by burning fuel. Rather, the sun's energy comes from nuclear fusion. In the process of nuclear fusion, hydrogen atoms join together to form helium. Nuclear fusion occurs only under conditions of extremely high temperature and pressure. The temperature inside the sun's core reaches about 15 million degrees Celsius, high enough for nuclear fusion to take place. The total mass of the helium produced by nuclear fusion is slightly less than the total mass of the hydrogen that goes into it. What happens to this mass? It is changed into energy. This energy slowly moves outward from the core, eventually escaping into space.

The Radiation Zone The energy produced in the sun's core moves outward through the middle layer of the sun's interior, the radiation zone. The radiation zone is a region of very tightly packed gas where energy is transferred mainly in the form of electromagnetic radiation. Because the radiation zone is so dense, energy can take more than 100,000 years to move through it.

The Convection Zone The convection zone is the outermost layer of the sun's interior. Hot gases rise from the bottom of the convection

zone and gradually cool as they approach the top. Cooler gases sink, forming loops of gas that move energy toward the sun's surface.

The Sun's Atmosphere

The sun's atmosphere includes the photosphere, the chromosphere, and the corona. Each layer has unique properties.

The Photosphere The inner layer of the sun's atmosphere is called the photosphere. The Greek word

photos means "light," so *photosphere* means the sphere that gives off visible light. The sun does not have a solid surface, but the gases of the photosphere are thick enough to be visible. When you look at an image of the sun, you are looking at the photosphere. It is considered to be the sun's surface layer. **The Chromosphere** During a total solar eclipse, the moon blocks light from the photosphere. The photosphere no longer produces the glare that keeps you from seeing the sun's faint, outer layers. At the start and end of a total eclipse, a reddish glow is visible just around the photosphere. This glow comes from the middle layer of the sun's atmosphere, the chromosphere (KROH muh sfeer). The Greek word *chroma* means "color," so the chromosphere is the "color sphere."

The Corona During a total solar eclipse an even fainter layer of the sun becomes visible. This outer

layer, which looks like a white halo around the sun, is called the corona, which means "crown" in Latin. The corona extends into space for millions of kilometers. It gradually thins into streams of electrically charged particles called the solar wind.

Features on the Sun

For hundreds of years, scientists have used telescopes to study the sun. They have spotted a variety of features on the sun's surface. Features on or just above the sun's surface include sunspots, prominences, and solar flares.

Sunspots Early observers noticed dark spots on the sun's surface. These became known as sunspots. Sunspots look small. But in fact, they can be larger than Earth. Sunspots are areas of gas on the sun's surface that are cooler than the gases around them. Cooler gases don't give off as much light as hotter gases, which is why sunspots look darker than the rest of the photosphere. Sunspots seem to move across the sun's surface, showing that the sun rotates on its axis, just as Earth does. The number of sunspots on the sun varies over a period of about 11 years.

Prominences Sunspots usually occur in groups. Huge, reddish loops of gas called prominences often link different parts of sunspot regions. When a group of sunspots is near the edge of the sun as seen from Earth, these loops can be seen extending over the edge of the sun.

Solar Flares Sometimes the loops in sunspot regions suddenly connect, releasing large amounts of magnetic energy. The energy heats gas on the sun to millions of degrees Celsius, causing the gas to erupt into space. These eruptions are called solar flares.

Solar Wind Solar flares can greatly increase the solar wind from the corona, resulting in an increase in the number of particles reaching Earth's upper atmosphere. Normally, Earth's atmosphere and magnetic field block these particles. However, near the North and South poles, the particles can enter Earth's atmosphere, where they create powerful electric currents that cause gas molecules in the atmosphere to glow. The result is rippling sheets of light in the sky called auroras. Solar wind particles can also affect Earth's magnetic field, causing magnetic storms. Magnetic storms sometimes disrupt radio, telephone, and television signals. Magnetic storms can also cause electrical power problems.

Post-reading

Explain your mind map to other groups.

Appendix F: Teacher's journal

.esson	Journal
	The overall results of the implementation have been the expected ones as the development of the activities responded to students' basic needs. In addition, the students were able to take part in each one of the stages of the lesson, in which they were **engaged** since the beginning until the end of the session. The pre- reading stage provided the learners with the necessary vocabulary they needed to convey meaning. Nevertheless, there are some aspects which deserve deeper attention such as the **input** given to the students in order to develop the different activities, they could have produced better outcomes if I had given them **enough vocabulary** to face the reading. Although the learners have been motivated it has been difficult to make them to go deeper in thinking. I mean **I need to plan activities to enhance critical thinking**. The learners have a **template for organizing the information** from the reading, then some aspects like **creativity**, sequence of the information and the way it was presented were not taken into account. The learners developed the graphic easily, they did not have difficulties with the vocabulary because they could easily take the information from the text. If I were to teach this lesson again I would provide the learners with a glossary that might help them to understand better the text because it was the first time they faced this **vocabulary.** It was an easy chart to complete, they have similar vocabulary from the reading then the answers from the learners were similar.
.esson 1	

Appendix G: Lesson plan template

Name of teacher:			Carolina Gomez Patiño			Candidate Number:	
Institution: Sierra Morena IED							
Date of Observation:	**D AY**	**M ONTH**	**Y EAR**				
					Length of class		3 hours
Class /grade	ninth grade				**Room:**		310
Number of students		35			**Average age of Students**		13-15 years
Number of years of English study		3			**Level of students** *(Use CEFR conventions)*		A1
Lesson Number *(please check √)*					**O bserver**		

Main Aim(s):
The students will be able to define rotation and revolution and its differences.

Aims related to language
The students will practice simple present tense.
They will learn basic vocabulary related to astronomy (sun, earth, revolution, rotation, axis, spinning, sky)

Aims related to content
The learners will learn the concepts of rotation and revolution

Main Skill
Reading
Sub-skill
Comprehension
Strategies
Comparing and contrasting

St age	Aim	Procedure Teacher and student activity	Time and interaction
Pre - reading	To activate students' previous knowledge and to provide them with a general view of the reading they will face	The learners will watch a video about rotation and revolution movements of the Earth. https://www.youtube.com/watch?v=cDed5eXmngE	
Dur ing - reading	To use a graphic organizer in order to organize the information on the reading	The learners will be given time to read by themselves. Then they will solve the second part of the reading test using the graphic organizer.	

Pos t - reading	To review the information from the reading	The learners will organize groups. They will participate in a jeopardy game about questions related to the reading	

Appendix H: Implementation sessions

Date	Content	Aim	Reading Skill	Data Collection
April 7th	The solar system	To test the students' reading skills	Comparing and contrasting	Pre-test- quiz, and questionnaire
April 14th	Rotation and revolution	To learn the concepts of rotation and revolution. To use simple present to express facts	Comparing and contrasting	Reading test
April 21st	Gravity and motion	To understand the concepts of gravity and motion and observe them in real situations To identify facts in the past	Summarizing	Reading test
April 28th	Phases of the moon eclipses tides the moon	To identify the characteristics of each phase of the moon To use simple past to describe a process	Main idea and details	Reading test
May 5th	Satellites	To recognize the characteristics and types of satellites	Main idea and details	Reading test
May 12th	The sun	To describe the main features of the sun and determine its importance on the universe Identify main idea and details	Summarizing	Reading test/questionnaire
May 19th	Inner Planets	To determine the main characteristics of the planets from the solar system To compare different planets from the solar system (Comparatives and superlatives)	Comparing and contrasting	Reading test

May 26th	Outer Planets	To compare and contrast comets, meteors, and asteroids according to their characteristics	Comparing and contrasting	Reading test
June 2nd	Stars and constellations	To understand the concepts of stars and constellations To identify main idea and details	Main idea and details	Reading test
June 9th	The solar system	To determine the impact of the strategy used	Main idea and details	Reading test

Appendix I: Checklist to assess the GOs

1.   The organizer contains main idea and details

2.   The information is well organized

3.   Shows clear understanding of the content

4.   Shows a creative design

5.   The sequence of the information is logical well ordered

6.   It does not have grammar or spelling mistakes

7.   Chooses appropriate graphic organizer to accomplish task

8.   The graphic organizer presents the information in a manner that is easy to follow.

9.   The relationships presented in the graphic organizer are correct and clear.

10.   The graphic organizer fulfills all the requirements of the assignment.

Appendix J: Results from the reading tests

		Lessons								
		L1	L2	L3	L4	L5	L6	L7	L8	Mean
	1	19	19	18	18	17	20	19	19	18,63
	2	7	13	14	16	15	19	17	18	14,88
	3	17	13	14	12	15	19	17	19	15,75
	4	14	12	19	15	20	20	16	16	16,50
	5	7	13	14	14	15	19	17	18	14,63
	6	11	11	16	15	13	15	18	13	14,00
	7	9	11	17	16	12	16	16	18	14,38
	8	16	15	16	16	15	16	16	17	15,88
	9	17	13	14	14	15	17	17	17	15,50
	10	11	11	14	16	13	16	17	17	14,38
		12,80	13,10	15,60	15,20	15,00	17,70	17,00	17,20	
		4,392	2,424	1,897	1,619	2,261	1,889	0,943	1,751	Mean

Aspects assessed in the checklist

Appendix K: Questionnaire

UNIVERSIDAD DE LA SABANA
MASTER IN ENGLISH LANGUAGE TEACHING-AUTONOMOUS LEARNING ENVIRONMENTS
ACTION RESEARCH PROJECT
Colegio Sierra Morena IED

Name/ Nickname: _____ **Group:** _____

Objetivo: evaluar el uso de los organizadores gráficos para mejorar la comprensión lectora y el aprendizaje de algunos conceptos de ciencia.

1. ¿Qué puedes hacer para organizar de forma efectiva los elementos de una lectura?

2. ¿Crees que el uso de un mapa mental te ayuda a comprender un texto en inglés? Sí o No. ¿Por qué?

3. ¿Crees que aprendiste contenidos de otras asignaturas en inglés? Por ejemplo, ciencias en inglés. Sí o No. ¿Por qué?

4. ¿Crees que los mapas mentales te ayudaron a mejorar algún aspecto de la lengua? Sí o No. ¿Cuáles?

5. ¿Crees que los mapas conceptuales tienen alguna desventaja?

6. ¿Has encontrado alguna dificultad en el trabajo con mapas conceptuales? Sí o No. ¿Cuál?

7. ¿Cómo has resuelto esas dificultades?

8. ¿Cómo te pareció el trabajo con mapas conceptuales?