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# Reading comprehension through the use of graphic organizers

## La comprension lectora a traves del uso de organizadores graficos

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**Abstract:** The main purpose of this study was to demonstrate the effectiveness of the application of graphic organizers to improve reading comprehension in students of English as a second language. The study covered a population of 25 university students of Language and Literature career who had deficiencies to understand details in narrative texts. Quantitative instruments were applied to sustenance the investigation. The instruments involved are pre-test and post-test, rubric, survey, and a checklist to estimate students' advancement and progress. The application of the checklist helped students to use the required elements in their tasks. The results showed that students improved their reading comprehension because while pre-test revealed a mean of 5.2/10, the post-test showed 9.5/10 which means 54% of improvement. Students had the opportunity to express their satisfaction of using this innovation because they suggested to apply the same strategy in other subjects. This work involves teachers and students since it can generate positive contributions of using graphic organizers to improve reading comprehension.

**Keywords:** comprensión lectora, organizadores gráficos, EFL, educación superior.

**Resumen:** El propósito principal de este estudio fue demostrar la eficacia en la aplicación de organizadores gráficos para mejorar la comprensión lectora en estudiantes de inglés como segunda lengua. El estudio cubrió una población de 25 estudiantes de la carrera de Lengua y Literatura en la Universidad de Guayaquil quienes tienen deficiencia para entender detalles en textos narrativos. Como soporte del estudio fueron aplicados instrumentos cuantitativos. Los instrumentos incluían pre y post evaluación, rúbrica, encuesta y lista de verificación para calcular el avance y progreso. La aplicación de la lista de verificación ayudó para que los estudiantes utilicen los elementos requeridos en sus actividades. Los resultados muestran que los estudiantes lograron mejorar su comprensión lectora mientras la pre-evaluación reveló una media de 5,2/10 la pos-evaluación mostró 9,5/10 lo que significa un incremento del 54%. Los estudiantes tuvieron la oportunidad de expresar su punto de vista acerca de esta innovación quienes sugirieron la aplicación de esta misma innovación en otras asignaturas. Este estudio involucra profesores y estudiantes ya que brinda contribuciones positivas del uso de organizadores gráficos para mejorar la comprensión lectora.

**Palabras clave:** reading comprehension, graphic organizers, EFL, higher education.

## Introduction

For English Language Learners (ELL), reading comprehension, an outcome that results from a mix of skills and abilities, is perceived as critical for knowledge acquisition and information exchange (Liu, Chen, & Chang, 2010; Chiu, Huang, & Chang, 2000). Reading and getting complete comprehension of the whole information in the texts becomes

very hard for students who are learning another language. Glenberg (2011) said that "reading comprehension, much like comprehension of situations and comprehension of oral language, is embodied" (p.5) which means that comprehension includes taking action about the physical world, objectives, and cultural background.

Nowadays reading has become into the most important and vital element of every educational curriculum to be taught in the learning process of a native or foreign language. It is a component that needs to be developed in accordance to the level of students. Reading helps students to gain knowledge, to improve their academic performance, and empowers them to become successful in this knowledge society (Bano, Jabeen, & Quitoshi, 2018). On the other hand, reading states a significant role in the language competence of the students. It is also a skill that must be trained and practiced indoors and outdoors.

The most difficult aspect to overcome for the students is the cognitive process because while the learner is reading he/she will be considering: the pronunciation, the meaning of the words, and the relation of new words with the context they are reading which becomes more difficult if they still need to translate into their mother tongue. It depends on the students' level to avoid translations If their level is higher, they do not need to translate because they can think in English.

It is necessary to consider that Ecuador shows a small indicator because (43%) of readers of the whole inhabitants, this indicates that each Ecuadorian reads fifty percent of a whole book every year (Centro Regional para el Fomento del Libro en América Latina y el Caribe [CERLALC], 2016). On the other hand, statistics from a local institution (Instituto Nacional de Estadísticas y Censos [INEC], 2012) shows that 27% of Ecuadorians did not develop reading habits. Accordance with the index some systems were performed by the Ministry of Education (Ministerio de Educación, 2016) which were built for learners to produce more and read better in their L1.

Local authorities stated in the national curriculum guidance that Ecuadorian students must finish high school as independent users of the language which means to reach B1 level (Ministerio de Educación, 2014). As the document stated: Level B1 is accomplished when the language learners are capable to understand the main points of readings written in clear, familiar and standard language.

B1 users are capable to comprehend and recognize longer, more complex expository, practical, chronical, and transactional scripts with an acceptable level of undersatanding. They are also able to use adecuate interpretation strategies to deal with different categories of texts (Ministerio de Educación, 2012). Additionally, at this level, learners are able to (1) communicate while traveling in countries that use the target language, (2) write simple, coherent essays about familiar topics, personal interest, experiences, events, and desires, and (3) justify their opinions (i.e.by giving simple, brief reasons) and explain their future plans.

Currently adolescent learners are still constructing and growing up cognitively, linguistically, psychologically, emotionally, and cooperatively

(Tomlinson, 2013). However, how well learners develop their reading skills depends on different factors like their learning environment if they studied in private or public institutions, if they practice reading outside classes, if reading is a habit for them, factors that will be a positive or negative influence during the development of the reading comprehension process. Catts and Kamhi (2017) stated that "the reader brings a set of cognitive-linguistic abilities, motivations, interests, and background knowledge to the task of reading" (p.73).

## Materials and methods

According to Edwards-Groves and Kemmis (2016), action research is when teachers engage in research to take a specific action of improvement and share the findings. This study was based in order to enhance the reading comprehension skill using graphic organizers applying Cmap tool. Therefore, action research was applied, quantitative research is explanatory and deductive with numerical data being collected to test a theory (Sim &Wright,2000). The instruments involved were pre – test, post – test, rubric, checklist, pre – survey and post – survey, all these tools provided quantitative data.

The data was collected from a total of twenty-five students. They are studying the first semester in the face-to-face modality, whose ages are between 17 and 20 years old, which more than 50% are men, their socio - economic environment is medium low, some of them live in Guayaquil and few of them live outside the city, they have basic digital skills in the use of the computer and web 2.0 tools application.

Their English level was B1 according to the CEFR, their English level was taken from internal information based on the placement test done by the students before they registered in the semester. They were students from a public university in Guayaquil, located in Guayas state, with the diagnostic test they reached B1 level. These students attended the first English module, out of seven modules in the English Department in order to achieve their B2 level. Sessions were from Monday to Thursday from 13:00 to 15:00.

To address the first question: To what extent will summaries improve graphic organizers? A rubric and a checklist were developed to analyze the results from the performance task in order to compare the achievements from the students with the use of graphic organizers and with its implementation. By using the rubric and the checklist, numerical data was obtained to evaluate the results from the performance task.

The rubric was applied to the students by the teacher in two opportunities during the three sessions. The main points from the rubric were an appropriate title and labels, lines, boxes, and texts are neat and legible, the information applied is correct, the spelling, grammar, and punctuation of the text, information in a manner that is easy to follow, understanding of the topic, the relationships between the information are correct and clear, the concepts are shown properly. it was adapted from Williams and Wooldridge (2018). (Appendix A).

The checklist was used by the teacher during the three sessions in order to control the advance from students and reviewed a general idea about the reading comprehension, the criteria applied was: make and support inferences, define and identify the theme, written summary, analyze, identify story elements, identify point of view and compare and contrast themes (Appendix B).

To answer the second research interrogation: to what extent will graphic organizers improve reading comprehension? A pre – test was shown before the innovation in the first day of class, the test was an adaptation of a reading comprehension section taken form the British Council website, the test was divided into three parts: First, they had to match characters with places, second, they had to choose correct the answer from questions based on the reading and the third part was to develop a graphic organizer (Appendix C).

In the last day of class, a post – test was given to the students to check the improvement of reading comprehension skills. The post – test was designed based on a reading taken from the British Council, the post – test also included a match exercise and a section where they had to choose the correct answer, in the final part they had to create a graphic organizer (Appendix D). Both tests provided quantitative data to the study.

The surveys answered the third question: What are students' perspectives towards the innovation? The post – survey which was designed by the researcher with six statements was filled out by students at the end of the final session to assess students' perspectives, feeling, thoughts about the innovation. Students responded to six statements which are about the experience of learning through Cmap tool, the convenience of applying Cmap tool, the feeling of improvement in the reading skill, the expectations about the innovation and the use of graphic organizers for reading their answers were based on a Likert scale of 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 4 strongly agree (Appendix E).

In order to determine the reliability of the survey, data was entered in the statistics software was used in this case the statistics package for the social studies (SPSS) to prove reliability which is 0.823 for the post survey. A demographic pre – survey was conducted to describe the participants in terms of their background, gender and access to internet among others (Appendix F).

As this study was conducted in a public university setting in a Centre downtown of Guayaquil, the class was assigned to the researcher with an authorization from the main authorities in the faculty, ethical issues arose between some moral and social values. First, the guarantee of a responsible conduct during this research with honesty, confidentiality, and respect for intellectual property. Furthermore, during the different phases of the study; namely: methodology, data collection, and analysis were addressed with objectivity to avoid bias from the teacher's perspective towards students.

Lastly, all the information obtained from this study was used by respecting institutional guidelines and laws, which are specific for this

kind of study. The participants of this research were named by codes; their participation and resources were acknowledged; and the students obtained their participation credit into the research.

All the Data acquired from the following research interrogations were examined in accordance with the innovation proposal applied to the students:

RQ#1: To what extent will graphic organizers improve summaries? During the second and third sessions of implementing the innovation students were asked to create summaries for making their graphic organizers based on a checklist and rubric to evaluate how they applied summary strategies based on narrative texts, the collected data was analyzed in SPSS to obtain frequencies of each component of the instruments during the implementation.

RQ#2: To what extent will graphic organizers improve reading comprehension? The pre – test was used before the innovation proposal and the post – test was applied after the innovation scheme, both were conducted and their results were considered as an evidence of students' understanding about reading comprehension including reading components, summarize and narrative. A software called SPSS (Statistical Package for the Social Sciences) was employed to get the denote, mode, average and standard variation as descriptive statistics. The outcome size was used to calculate the impact of the innovation.

RQ#3: What are students' perspectives towards the innovation? At the end of the innovation during the last session a post – survey was applied to measure the acceptance from the 25 students to use Cmap tool for a better comprehension of the narrative texts during the class to obtain better results.

Different variables and criterion were generated to upload the information from the surveys in The SPSS software, which results are shown by graphical results for a simple and better comprehension.

## Results

Results of English diagnostic tests which include the four abilities is part of the academic process for students who enter to a public university in the city of Guayaquil. They show that most of high school students who came from public institutions do not reach the proposed goal by the Ecuadorian educative system because they can read and get a general comprehension of texts but do not understand all the details or minimum information of each single idea.

On the other hand when students have to decode the new vocabulary which is strange and difficult to relate with the content specifically when they have to work with a lot of unknown information so that the comprehension of detailed content while reading becomes very hard consequently it will make them to get confused Woolley, Anderson, and Pearson declared that "Reading is a collaborative solving procedure of creating gist from written scripts" (as cited in Ontario Ministry of Education, 2004), p. 61).

The deficiency of comprehension when students read has been investigated in schools and basic elementary levels as it is explained in this research: the majority of students were not able to recognize main and secondary ideas, characters, settings, moral, facts or opinions in stories, cause and effect, or compare and contrast ideas in a text. Moreover, students memorized possible answers for the tests. A study conducted by the British Council in Ecuador (2015) reported that students with basic reading skill claimed that they did not read in English frequently enough (45%), others said they had not been studying English very long (28%), and almost a quarter of Ecuadorian English learners explained different reasons related to the education system constraints.

Consequently, the main objective of this research work was to analyze the difficulty to develop reading comprehension properly and at the same time the presentation of an appropriate alternative to improve understanding in reading. It is necessary to consider that reading comprehension policies can be divided accordance with several categories or titles, which can be applied during the entire reading process. Among the categories the most important are the following: POSSE (Predict-Organize-Search-Summarize-Evaluate); PQRS (Preview-Question-Read-Summarize); Summarize; and, Questions, including others (Asikcan & Pilten, 2018).

The development of reading comprehension requires the application of the appropriate strategy in accordance with the level of the students. The most common strategies are: Monitoring comprehension, which includes observing students' production, metacognition, the learner understands the content, graphic and semantic Organizers which includes division and organization of the information, Answering Questions in this stage the learner can respond different question about the content, Generating Questions in this part the learner creates questions, Recognizing story structure the learner is able to structure different parts of the reading, and Summarizing this involves to extract and reduce the most relevant information of the content.

It is necessary to consider that students need to practice more reading, not only academic topics they can practice through comics or topics they enjoy reading. If students read daily, they will develop the ability to read and understand most of the content they are reading. In this way, children learn to read by reading (Atwell as cited in Tomlinson, 2013). Practice is the key to improve the skill.

Teachers use instructional tools to help students remember the knowledge. One of the most common instructional tools is graphic organizer (Ozman, 2011). Ozman (2011) examined the graphic organizer that students filled out while reading. The author found that graphic organizers was especially beneficial for them. It helped them see the parts compared to a whole and how the ideas relate to one another.

Graphic organizers are popularly used to measure student understanding and comprehension. One study stated "real examples are described to explain how to use graphic organizers to help ELLs comprehend book content by classifying facts, analyzing problems,

summarizing main points, and criticizing or evaluating the decisions made by authors" (Pang, 2013, p. 54). As the study stated, graphic organizers are used in a variety of ways that are all based around comprehension. Teachers use graphic organizers for analyzing, summarizing, and evaluating. It is a helpful strategy to develop reading comprehension in students because it is based on putting words or pictorial representations together about what they are reading.

validates the use of computer-assisted concept mapping via the Cmap Tools software to teach ELL reading comprehension in intermediate pre-university students. Soleimani and Nabizadeh have found that computerized concept mapping serves as an effective alternative to conventional ELL summarizing strategies. Both learner-constructed and fill-in-the-map computerized concept maps were found to be useful for enhancing ELL students' reading comprehension skills.

The benefits of software-based concept mapping approaches have been explored by Eppler (2006). Specifically, Eppler examined the complementary use of software-based concept maps, e.g., those created through Inspiration software. He reported that it enhanced students' motivation, understanding, attention, and recall while they were learning ELL reading comprehension.

Khodadady and Ghanizadeh (2011) reported the positive influence of concept map construction on EFL learners' critical thinking ability, as well as their attitudes toward EFL reading comprehension. The study revealed that when using the concept mapping technique during reading and post-reading phases, EFL students came to learn the interrelationships of ideas within the passage by identifying the main points and using circles or boxes to connect key words, thereby forming the word connections and promoting learning.

Recently, research has found that concept mapping is one of strategies which can enhance learners' reading comprehension (Chang, Sung, & Chen, 2002). Concept mapping is a graphic organizational strategy which can help individual and groups explain and explore their knowledge of a topic (Kinchin, 2000). It is for this reason that concept mapping appears to be an effective way to teach and learn to improve reading comprehension.

The study analyzed the innovation of applying graphic organizers to improve reading comprehension skills. The variables of the study are the following: the application of graphic organizers through the CMap tools as independent variable and reading comprehension improvement as the dependent variable. The following theoretical support was divided into three sections (reading, narrative texts, and graphic organizers), where concepts and definitions were summarized in order to describe the variables of this innovation.

Reading is considered as one of the receptive skills for learning a new language, its comprehension process involves mental and emotional aspects, among cognitive and metacognitive procedures like: attention, reading discernment, memorization, and phonological recognition (Pečjaka & Pircb, 2018). Attention proposed that the visual system

exploits the dichotomy of a fast-magnocellular channel and a slower parvocellular channel for the purpose of selective attention (Vidyasagar, 2013). The human visual system has predominantly two types of retinal neurons that form two different pathways, the parvocellular, or ventral, pathway (for form discrimination), and the magnocellular, or dorsal pathway (for location and motion processing).

Along with perception and motivational factors, meta (cognitive) abilities are those, which define individual differences in students' reading abilities. They influence the processes of reading automation and reading comprehension (Borella, Carretti, & Pelegrina, 2010; Gerst, Cirino, Fletcher, & Yoshida, 2015).

According to Asgari and Rafiee, (2018), memorization involves attention. It is the starting point of the memory process. Meta cognitive strategies help students to combine the fresh information with the old information and restore it in the memory. What is stored in long-term memory is never lost. Therefore, the students can increase their memorization.

For Gamboa-Gonzalez, comprehension is carried out when the reader makes a connection with the previous knowledge and the text, but for Candlin and Hall (2011) reading is drawing the meaning from printed page with an appropriate interpretation. In both cases it is based on the texts, however the first is considered as a process and the second is considered as an ability.

Simply stated, vocabulary is knowledge of words and their meanings (Lehr, Osborn, & Hiebert, 2005). In reading, knowing a word involves being able to decode written text and comprehend its meaning. Researchers and practitioners alike attest to the critical role of vocabulary in reading comprehension for both native speakers and second language learners (Blachowicz, Fisher, Ogle, & Watts-Taffe, 2006; Coady & Huckin 1997; National Institute of Child Health, Human Development (US), National Reading Excellence Initiative, National Institute for Literacy (US), & United States Department of Health, 2000). Without sufficient vocabulary, it is impossible to successfully read for meaning because there is not enough comprehension.

Considering that the early scholarly course for children contains all the components of the language like phonemes, morphemes, syntax, grammar, and semantics, including others which are involved during the development of their skills. Additionally, it is necessary to consider that the procedure of reading acquisition has to be explained and developed through patterns because it becomes the easiest way for young learners to learn. Obviously that the cycle of this process begins at children's home and follows up during the scholarly period because children imitate their parents at home and at school they complement and relate with scientific knowledge the previous information.

Moreover, children become into active readers if parents, relatives, babysitters, and teachers frequently read audibly and clearly to them (Tomlinson, 2013). If children are surrounded with readers it will become into a habit for them to read. The foundational reading skills are:

Comprehension, Fluency, Phonics, Phonemic and Phonological which are integrated in the development of reading comprehension for learners (Hoffmann, 2010).

Reading comprehension is the most complex aspect of reading because our brains have to process information, It does not only involve all the other four aspects of reading; it also requires the reader to draw upon general thinking skills, it also works with our imagination. When a reader is actively engaged with a text, starts asking and answering questions about the story and summarizing because he/she has understood very well the information. Like vocabulary, reading comprehension skills develop and improve over time through instruction and practice, so that If the reader keeps reading it will become faster and easier.

Adams (1994) explained that reading requires developing a system that involves two aspects: knowledge and activities, these two aspects would be useless without using language comprehension. It is necessary to consider previous knowledge to understand better which will allow a better development of activities. Therefore, Candlin and Hall (2011) proposed five aspects that are involved in developing a reading activity:

**Table 1.** *Reading Activities*

**Table 1**
Reading Activities

| Activities | Description |
|---|---|
| Purpose for reading | A reader has several possible purposes for reading, and each purpose has different combinations of skills and strategies. |
| Fluent reading abilities | In reading, it is necessary to employ many skills, processes, and knowledge bases that act in combination to reach reading comprehension. |
| Cognitive process | Reading involves a cognitive process that operates under intense constraints to develop an understanding of the reading material |
| Interpretation | Reading also involves the ability to interpret meaning from different texts. |
| Social context | In reading, activities are developed in a social context that will be interpreted and used in different ways. |

According to Fadwa (2010), an English language learner needs to understand the text because the key of this activity is without doubts to understand the central idea of the topic; that implies messages, thoughts and structures. One factor to be successful in this learning area is to have a large vocabulary that can make a positive contribution to reading comprehension. Vocabulary allows English language learners to understand a text in better way no matter genres, topics, or schoolbook.

Additionally, there are some features for developing comprehension skills in English students. According to the Barret taxonomy, literal recognition involves understanding of "information that is explicitly stated in the text. Such questions ensure that the views and information overtly expressed in the text are understood. In some texts the content is implicit and it becomes easier for the reader to make relation and tie the

content. However, there are other texts which have different ideas that are not easy to relate so that comprehension becomes complex for the reader.

For example, recognition or recall of main ideas, details, sequence, cause-effect relationships, character traits" (Fadwa, 2010, p. 18). Every time that students can recognize words and make relation with previous information, they are connecting the content of the reading which facilitates their comprehension. To sum up, connection, relation and contrast of information will be helpful for a better comprehension when the students are reading.

Reading is more than just recognizing words. According to Veit and Gould (2004), inferences in reading involves "the ability to interpret texts by drawing inferences-recognizing a writer's intentions, perceiving what is implied but not stated, making connections between the ideas you read and other ideas that you bring from outside the text, and drawing conclusions" (p. 77).

For Fadwa (2010), inference makes use of linguistic knowledge, logic, previous knowledge, and new knowledge in order to associate situations to infer different types of ideas and predict results in a reading situation. Additionally, evaluation makes "judgements about whether something is real or imaginary, whether it is appropriate, worthwhile, desirable or acceptable. Evaluation involves values and therefore there is usually no answer to questions involving evaluation" (Fadwa, 2010, p. 18).

Considering that Summarizing is one of the reading strategies that let students to comprehend the content of the text more profoundly, which at the same time operates functions as a sign of understanding (Pečjaka & Pircb, 2018). Learners need to understand what they have read to be able to summarize and reduce content using their own words. At the same time Summarizing supports learners to describe the meaning of information and to keep the knowledge in long-term memory.

On the other hand, Summarizing allows students to distinguish their substantial thoughts from others and communicate the knowledge using their own words (Bıyıklı & Doğan, 2015). It is also necessary to consider some important aspects like: sequence of events, principal characters, and setting which must be taken into account when you put together what is more relevant in narrative texts (Freedman, 2012). If students follow the order of these aspects, they will organize the content of the reading easily and faster.

It is necessary to consider that Summarizing also involves the recognition of main ideas, removing irrelevant information, and renovating ideas from original texts (Ozdemir, 2018), so that learners can apply their own vocabulary to create the paragraph. As Sefer, Ören, Benzer, and Konuk (2016) stated: it would be ideal that before requesting students to write a summary, it becomes essential to teach students how to do it by explaining them the steps to use, teachers need to explain step by step how to structure a summary. If students identify information, they need to follow a sequence to organize the content to be understood for everybody.

This process includes look back over the content of the reading meticulously: highlighting essential words in each paragraph, recognizing the story components like characters, and setting, realizing principal ideas and specific information, as well as the most relevant actions. It also includes verifying grammar and punctuation, and using sequencing words, among others (Ozdemir, 2018). Sometimes it is necessary to ask other people to read what you have summarized to confirm if it is clear enough.

One of the main characteristics of Narrative texts is to communicate what the readers understand and perceive in front of different situations. This episode or chain of events is diffused from the narrator's point of view considering aspects like: the location, time, and people to provide information about a text (Ozdemir, 2018). Accordance with The Program of International Student Assessment (PISA, 2015) which established narrative texts as the kind of text where the content of a determined situation refers to properties of items in time, so that the text must be based in different situations and circumstances considering the period of time.

Furthermore, when students structure a summary of a narrative text, it must be organized with the following parts as: introduction, development, and conclusion paragraph. To create the introduction the characters, setting, and main ideas are considered and integrated. The most relevant actions, problem, and solution are added in the development. Finally, the outcome, consequence, reaction from the principal character, and resolution of the characters of the story are incorporated in the conclusion. To sum up, students can include the theme, message, or lesson showed in the story (Chen & Su, 2012). It is essential to follow up the steps to structure a summary of a narrative text because students can organize better the information they must use.

Learners must consider that using Narrative texts involves answering chain questions about time, experiences, cycle of events, and why the characters work in certain starring roles in the story. If all these questions are considered in the narrative text it would be easy and comprehensible for the reader which will be principal objective. (HMH, 2017).

The main elements to be considered in the narrative texts are:

✓ Introduction
✓ Development.
✓ Conclusion paragraph.

Organizers of ideas have been applied in other learning areas such as literature, history, social studies where students separate the information in different features and in small parts which benefit the learners to explain the whole contents. Compounding the problem, students in content area classes, such as science and social studies, are often expected to gain much of their content knowledge from their textbooks, where the content, vocabulary, and text structure is often complex and unfamiliar (Duke, 2000; Stein & Trabasso, 1981).

The classification of information by ideas help students to analyze sentence by sentence, idea by idea which make them capable to

answer questions, give opinions, contrast information in different tasks about the same reading. Consequently, the essential reading skills are used to reinforce reading understanding of texts by applying reading strategies (Houghton Mifflin Harcourt [HMH], 2017). The application of different reading strategies will help for a better understanding of the content of the reading.

There is evidence that a specific type of GOs, concept maps, is a useful strategy for English as a Second Language (ESL) students (Block, 1986), few studies investigated the effectiveness of GOs on L2 reading comprehension. To be more precise, Tang (1992), who examined the relation of graphic representation of text structure to comprehension with ESL students, indicated great gains in the amount of information recalled. The segregation of the ideas should be done by selecting clue words, prompts, short sentences. They are used to build up organizers of ideas which could be read in order to explain the complete information after reading the whole text. Thus, students get a high level of comprehension of the whole text.

A study (El-Koumy, 1999) focused on the different effects of three semantic mapping strategies involved in the development of the reading process: (teacher-initiated, student mediated, teacher-student interactive mapping) for a better reading understanding of ESL where students have the opportunity to reveal that in the teacher-student interactive mapping group reached substantial better results than the other two groups, which demonstrated that students can develop their skills better when they have more opportunities to practice and interact.

Graphic organizers have been linked to the development of higher thinking skills for reading comprehension (Gil-García & Villegas, 2003). In a pre-reading activity, graphic organizers "...help prepare students for reading" (French & Landretti, as cited in Ben-David, 2002). Gil-García and Villegas (2003) cited benefits of this strategy in helping students to link and organize their background knowledge to new knowledge, think divergently, recall, transfer, and apply what they have learned.

Similarily, Cassidy and Hossler (as cited in Bowman, Carpenter, & Paone, 1998) affirmed that students can organize and recall information better from a reading. Since the students were able to use the graphic organizers to picture the information and remember relationships, they improved their comprehension (Stenson, 2006). Additionally, Chularut and DeBacker (2004) demonstrated facilitative effects of the use of GOs on ESL students' text learning, self-efficacy and self-monitoring.

Research suggests that teachers should pay attention to two important issues involving graphic organizers. These are when to use a graphic organizer and who constructs it. Graphic organizers can be used before, during, and after instruction (Strangman, Hall, & Meyer, 2003). Graphic organizers can be constructed by the teacher, the learners, or by teachers and learners. The point of implementation and generating types may produce different learning outcomes.

"GOs are used in order to assess the degree of students' understanding and enhance recall, retention and summarization of main ideas, which

can often function as a plan leading to writing tasks," (Manoli & Papadopoulou, 2012, p. 353). Graphic organizers are considered as a visual tool that facilitates different types of learners such as English Language Learners to understand concepts better during their learning process.

Alvermann and Boothby (1986, as cited in Ben-David, 2002, p. 13) suggested that "...the effects upon comprehension are increased when graphic organizers are partially constructed by students as a during-reading or post-reading activity". Another study found that the use of graphic organizers helped students' revival of knowledge while rereading a text (Griffin, Malone, & Kameenui, 2010). Moreover, students can show personal understanding and response on graphic organizers (Buehl, reported in Echevarría, Vogt, & Short, (2008).

When teachers are correctly trained in using graphic organizers, the graphic organizers can be very beneficial in helping students keep track of information (Ropič, & Aberšek, 2012). In order that graphic organizers be effective, the teacher needs to be properly familiar with them, and able to teach the students how to use them. Teachers need to explain step by step how to create graphic organizers, show different examples, make students practice and finally ask them to work alone.

Informational texts have a different structure than narrative texts, and graphic organizers have helped students realize this structure (Ermis, 2008). In the study by Ermis (2008), graphic organizers were found to show relationships in ideas and helped students pick main ideas out of a text. Suzuki, Sato, and Awazu (2008) exploring the advantage of the spatial graphic representation of an English sentence over a linear sentential representation supported that the spatial graphic display enhanced ESL readers' comprehension of sentences more than the sentential display did.

There are two types of graphic organizers, concept maps and Cmap tool that are used primarily in comparison. They are found in all levels of education because of their flexibility of subject focus, but primarily used in elementary classrooms. Graphic organizers can be used in many ways but have found to be more effective when used in certain ways (Manoli & Papadopoulou, 2012, p. 353). In this study graphic organizers were used to enhance the students' ability to recall and to assess their understandings of the readings.

Concept maps are a form of graphic organizer that includes enclosed concepts (usually in a circle or square) with lines connecting linked concepts. Generally, the connecting lines are labeled to demonstrate the relationship since different viewers of the graphic organizer could see different relationships between the concepts (Manoli & Papadopoulou, 2012). They organized the most general concepts on top with the most specific on the bottom (Morphew, 2002).

Concept maps also help to combine what the student already knows with new information in an organized path. Concept maps can also be tools in assessment to show what the students have learned, or as instruments to see their process of thinking (Chicioreanu &

Litoiu, 2012). Concept Maps are necessary tools to develop student's comprehension because they have to separate, organize and summarize content of what they have already read.

The Institute for Human and Machine Cognition (IHMC) defined CMap Tool as a free software that was developed at the IHMC in the United States (Cañas, Hill, Garff, Suri, Lott, Eskridge, 2004). Facilitating "the collaborative construction, sharing and publishing of knowledge models represented as concept maps." (p. 125) and empowering learners to create propositions connected by specific linking words to portray of textual relationships more effectively.

This software makes it easy for users to construct and modify concept maps during the mapping process, while allowing them to collaborate online via the internet. Users can also publish their maps in the virtual space so that anyone connected to the web can access them. Dias (2011) said that it allows for "both synchronous and asynchronous collaboration during the construction of concept maps" (p. 896) in a world wide web environment that can make collaboration faster and offer the possibility of sharing knowledge among other users all over the world.

As stated by Novak and Cañas (2006), this computer software can provide extensive support "for the collaborative construction of concept maps by groups, whether they are at the same location or in distant locations", and this can facilitate learning and retention of information. Furthermore, the possibility of using media resources like pictures, videos, external links, among others; made this software more interesting for students of different educational levels.

To help students improve their reading comprehension, separate information, reduce content and organize ideas, graphic organizers seem to be a helpful and feasible strategy to develop students understanding while they are reading a test. Thus, the following research questions were established during this research:

· To what extent will graphic organizers improve summaries?

· To what extent will graphic organizers improve reading comprehension?

· What are students' perspectives towards the innovation?

The application of this innovation took 24 teaching hours in three weeks. This study addressed first semester students from a public university in the city of Guayaquil. For this innovation readings from different books were selected. Besides, a variety of pictures were used to re-create the stories through graphic organizers in the CMAP application. The students followed a lesson plan based on backward design which was elaborated for the application of this innovation in order to follow the steps for reading.

During the first week of the process, a purpose for reading was that students got familiarized to the different kinds of narrative texts and elements (characters, context, problem, ending and conclusion). These elements helped students to create the graphic organizers based on the summaries from readings. Students were divided in groups, so that cognitive process is applied because each group had a specific type of

reading so they could practice identifying the reading elements and started working on their summary.

In the second week, students brought their summaries to start with the checking process based on the identification of the elements in the reading, then each group provided a feedback to the other groups telling them if their summaries were comprehensible, this process was conducted through several classes during the week in order to improve students' reading comprehension and summaries.

The teacher completed the checklist to determine if the students reached the goals of the reading elements, and if the summary was appropriate and according to the reading. The summaries had to include: a character description, a timeline story, the problem and the solution were clearly identified by the students during the process.

Since the first day of class up to the end they were working with different stories. The last one was used to create an innovative story with the help of Cmap tool as a prove of innovation. It included the reading elements and a graphic organizer. A rubric based on the reading components, grammar mistakes and creativity were applied by the teacher to evaluate the final project.

There are various advantages to using the Cmap tools software to empower students. In addition to facilitating the process of collaboration while students were involved in the task of concept mapping their texts, it also guaranteed access of different internet users to the maps that can be virtually published, and online debates can be held at any time to be involved in different social contexts. Maps can also be modified, and subordinate concepts and examples can be added based on ideas shared online. (Dias, 2011)

The principal objective of this study was to determine the benefits of using graphic organizers to increase reading comprehension. The quantitative mechanisms delivered information to answer the next research questions.

To address the first research question of this study: *To what extent will graphic organizers improve summaries? D*uring the first and the last weeks of the innovation a checklist was applied in which the teacher marked in "yes" or "no" for the different summaries' components about the narrative texts. In the figure 1, the results are shown based on a total of 5 groups which are composed by five students per group.

*Figure 1.* Checklist for Reading Review

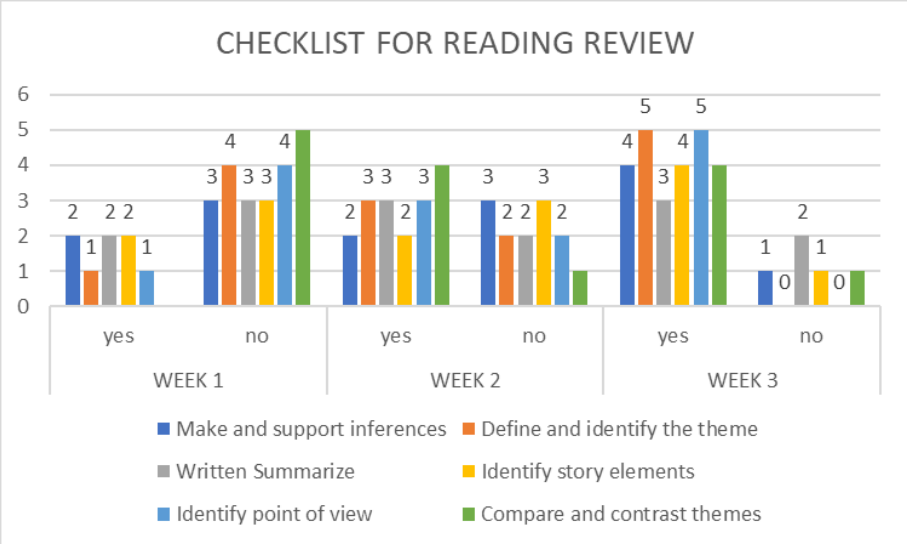


**Figure 1**
Checklist for Reading Review

It is important to know that before structuring their summaries student's completed graphic organizers, next the results in the figure 1 of the content and use of the graphic organizers. The figure 1 shows that further than twenty students contained almost all the necessary components that were stated in the previous checklist in their summaries. A total of twenty students possibly will achieve the first element related to make and support inferences, this means the students had the knowledge to define and identify the theme, most of the students wrote their summaries without difficulty, they were able to analyze, compare and contrast story elements based on a clear identified point of view. More than 80% could compare and contrast themes to reach the goal.

A rubric was applied to evaluate the performance task. This rubric was designed to evaluate how much the students have developed each criterion. It was given at the beginning and at the end of the innovation. Based on the data shown in table 2 a clearly improvement is shown, 100% of groups included in the graphic organizer an appropriate title and labels, 100% demonstrated an understanding of the topic, its relationships and related concepts and 80% of the students used the correct information in the graphic organizer.

**Table 2** . *Comparison before and after innovation*

**Table 2**
Comparison before and after innovation

| RUBRIC IN TERMS OF GROUPS | | |
|---|---|---|
| COMPARISON BEFORE AND AFTER INNOVATION | | |
| CRITERIA | pre | post |
| The graphic organizer has an appropriate title and labels. | 2.8 | 5.0 |
| The graphic organizer's lines, boxes, and text are neat and legible. | 2.2 | 3.8 |
| The information in the graphic organizer is correct. | 2.6 | 4.8 |
| The spelling, grammar, and punctuation of the text on the graphic organizer are correct. | 2.4 | 4.2 |
| The graphic organizer presents the information in a manner that is easy to follow. | 1.8 | 4.6 |
| The relationships presented in the graphic organizer are correct and clear. | 1.8 | 4.0 |
| The form in which the graphic organizer portrays the information is appropriate to the relationships being represented. | 3.6 | 4.8 |
| The graphic organizer demonstrates an understanding of the topic, its relationships & related concepts. | 2.2 | 5.0 |
| The graphic organizer fulfills all the requirements of the assignment. | 2.4 | 4.8 |
| Overall, the graphic organizer represents the student's full potential. | 2.4 | 4.4 |

This table demonstrates that most of the groups got a suitable comprehension 80% presented the information in a manner that was easy to follow and 80% of the information in the graphic organizer was correct. However, 40% of the groups found problems related to format based on how to choose the graphic organizer's lines, boxes, and text in order to make them neat and legible, as a result of their low digital competence.

To answer the second question: *To what extent will graphic organizers improve reading comprehension?* In accordance with the outcomes from the pre – test and post – test they presented a significant difference in students' comprehension about the content they have already read. The outcomes of both tests are submitted in figure 2.

*Figure 2.* Comparison of the pretest vs posttest

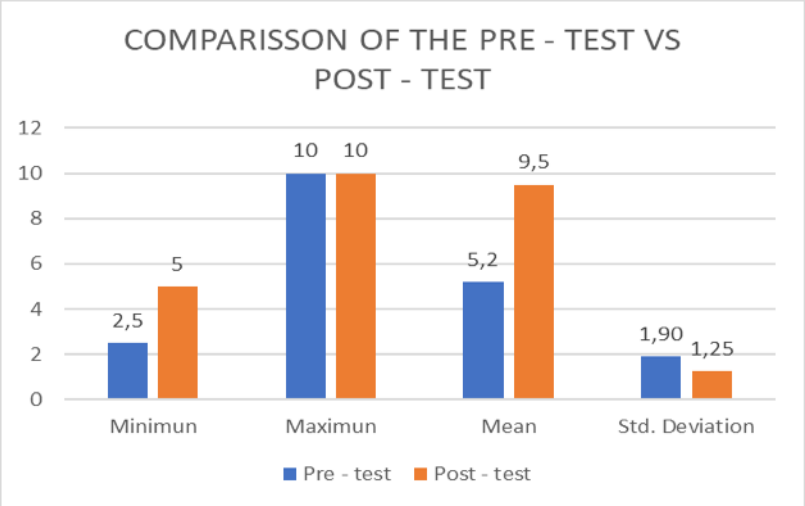


**Figure 2**
Comparison of the pretest vs posttest

Figure 2 shows the minimum as well as the maximum results, which means that the standard deviation was acquired from the pre – test and post – test. It illustrates that the mean of the post – test is higher than the pre – test and the standard deviation is lower in the post – test which is appropriate for the research. Another useful part of the graphic is to see that the minimum of the grades increased from the pre – test (2.5/10) to the post – test (5/10).

With a p value = 0.000, it was concluded that there was statistical evidence that the results are statistically significant. It means they did not occur by chance, but they were result of the implementation. Therefore, it was concluded that results from the pre – test (5.2) verified a positive increase in the post – test (9.5).

Additionally, the outcomes indicated a Cohen's . (Mean of pre – test, produced by post – test / combined with the Standard Deviation) = 2.687 which involves a large impact range. Cohen (2013) stated that 0.20 upwards is a small difference, 0.50 upwards is a moderate difference and 0.80 upwards is a large difference. In other words, the data indicates that students' reading comprehension skill was improved after the application of the innovation.

Regarding the third question: *What are students' perspectives towards the innovation?* A post – survey was conducted to the students at the end of the final session. Results of the survey evidenced that students strongly agreed about the benefits to apply ICT to improve reading comprehension by the use of graphic organizers.

*Figure 3.* Survey About Innovation

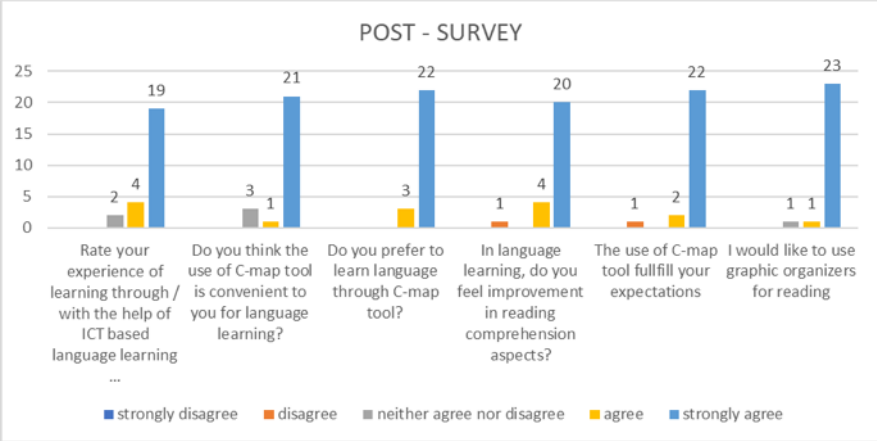


**Figure 3**
Survey About Innovation

In this figure the blue highest bars represent most of the twenty-five students involved in the innovation, they strongly agreed with each of the six components, this results reveal that students consider that applying ICT is a good strategy for a better reading comprehension by the use of graphic organizers.

## Discussion

An important issue for the implementation was the students' digital competences for applying the different technological resources into the classroom, because during the lesson plan they had to use apps or hardware, which were not taught, it was assumed that university students were able to follow the teacher's instructions.

A relevant limitation was the technological equipment available in the university for every student although they were working in collaboration, they needed a single computer, smartphone or tablet to work properly. Another difficulty was the effectiveness of the connection which sometimes worked well and continuously and sometimes it stopped and interrupted the activity and students have to restart.

Lastly, it was a limitation to observe when students demonstrated lack of interest to learn the language which becomes into an obstacle during the learning-teaching process.

## Conclusions

Graphic organizers are considered as a widely used technique in classrooms because of their positive effects on students, no matter their gender, age, level of English. This research study has led to positive conclusions about the use of graphic organizers with students. They have shown to be completely effective with English language learners and reading comprehension.

Based on the action research reported in this paper, it can be stated that the creation of concept maps with the CMap Tools software can empower EFL students in different ways. First, they learn to organize, and structure knowledge acquired from texts in another semiotic code: the visual one. Second, through the representation of texts graphically shown on the computer screen and the relationships between concepts being more evident, students' comprehension and retention of text frameworks were enhanced. Third, the students also realized they can read well in English, once they apply appropriate strategies. Furthermore, their self-esteem increased as they feel they are able to comprehend texts written in English in a more efficient way. The use of concept maps powered by the CMap Tools software can be a useful and efficient strategy to achieve this goal in classes.

To sum up this study guided the researcher to provide more feedback to all kind of learners about the application of the appropriate strategies to summarize with the use of CMap as graphic organizer. According to the following international institutions such as: National Reading Panel report, with the purpose of increasing reading, National Institute of Child Health Human Development (US), who take care of children's health, National Reading Excellence Initiative, working on reading improvement, National Institute for Literacy (US), & United States Department of Health (2000), institution working to develop literacy in the country, fluency is reading accurately, quickly, and expressively. These three critical elements work together to produce fluent readers. Fluent readers recognize and comprehend words simultaneously while making sense of the text as they read.

## References

1. Adams, M. J. (1994). *Beginning to read: Thinking and learning about print*. London MIT press. Retrieved from: https://books.google.es/books?hl=es&lr=&id=P_Hk7-n8i1AC&oi=fnd&pg=PR5&dq=Beginning+to+read:+Thinking+and+learning+about+print.+MIT+press&ots=PoWF06b6LS&sig=MoucC4lmjpHOcHWlPQcP0ntQ_Bg

2. Asıkcan, M., & Pilten, G. (2018). Investigation of reflecting reading comprehension

3. strategies on teaching environment among pre-Service classroom teachers. *International Electronic Journal of Elementary Education, 10*(4), 397- 405. doi:10.26822/iejee.2018438129

4. Asgari, M., & Rafiee, M. (2018). *Meta-cognitive learning strategies: The effect of training strategies on memorizing, comprehension and the speed of reading*. Retrieved from: http://mail.khazar.org/bitstream/20.500.12323/3823/1/Mohammad%20Asgari.pdf

5. Bano, J., Jabeen, Z., & Quitoshi, S. (2018). Perceptions of teachers about the role of parents in developing reading habits of children to improve their academic

*6.* performance in schools. *Journal of Education and Educational Development, 5*(1), 42-59 Retrieved from https://files.eric.ed.gov/fulltext/EJ1180618.pdfBenzer,A

7. Ben-David, R. (2002). *Enhancing comprehension through graphic organizers*. (Doctoral dissertation). Retrieved from: https://eric.ed.gov/?id=ED461907

8. Blachowicz, C., Fisher, P., Ogle, D., & Watts-Taffe (2006). Vocabulary: Questions from the classroom. *Reading Research Quarterly, 41*(4), 524-539. Retrieved from: https://ila.onlinelibrary.wiley.com/doi/abs/10.1598/RRQ.41.4.5

9. Block, E. (1986). The comprehension strategies of second language readers. *TESOL Quarterly, 20*, 463-494. doi:10.2307/3586295

10. Borella, E., Carretti, B., & Pelegrina, S. (2010). The specific role of inhibition in reading comprehension in good and poor comprehenders. *Journal of learning disabilities, 43*(6), 541–552. doi: 10.1177/0022219410371676.

11. Bowman, L. A., Carpenter, J., & Paone, R. A. (1998). *Using graphic organizers, cooperative learning groups, and higher order thinking skills to improve reading comprehension*. Chicago: M. A. Retrieved from: https://eric.ed.gov/?id=ED420842

12. British Council. (2015). *English in Ecuador. An examination of policy, perceptions and influencing factors*. Retrieved from https://ei.britishcouncil.org/sites/default/files/latin-america-research/English in Ecuador.pdf

13. Bıyıklı, C., & Doğan, N. (2015) The effect of learning strategies used for rehearsal

14. on the academic success. *Education and Science. 40*(181), 311-327.

15. doi:10.15390/EB.2015.2728

16. Candlin, C., & Hall, D. (2011). *Teaching and researching reading.* Great Britain: Pearson Education Limited.

17. Cañas, A. J., Hill, G., Carff, R., Suri, N., Lott, J., & Eskridgee, T. (2004). CmapTools: A knowledge modeling and sharing environment. Retrieved from: http://dahlberg.rwdesarrollos.es/wp-content/uploads/2019/10/cmc2004-283.pdf

18. Canãs, A. J.; Novak, J. D.; González, F. M. (2004). *Concept maps. theory, methodology, technology*. Proceedings - 32 -of the first international conference on concept mapping (v. I, p. 125-133). Pamplona, Spain: Universidad Pública de Navarra. doi=10.1.1.137.3737

19. Catts, H. W., & Kamhi, A. G. (2017). Prologue: Reading comprehension is not a single ability. *Language Speech and Hearing Services in Schools, 48*(2), 73. doi:10.1044/2017_lshss-16-0033

20. Centro regional para el fomento del libro en América Latina y el Caribe [CERLALC]. (2016). *Ecuador: Proyecto de cultura impulsa el libro y fomenta las actividades de lectura*. [Ecuador: Culture project promotes the book and encourages reading activities]. Retrieved from: https://cerlalc.org/ecuador-proyecto-decultura-impulsa-el-libro-y-fomenta-las-actividades-de-lectura/

21. Chang, K., Sung, Y., & Chen, I. (2002). The effect of concept mapping to enhance

22. text comprehension and summarization. *The Journal of Experimental Education, 71*(1), 5–23. http://dx.doi.org/10.1080/00220970209602054

23. Chen, Y., & Su, S., (2012). A genre-based approach to teaching EFL summary

24. writing. *ELT Journal, 66*(2), 79-95 doi:10.1093/elt/ccro61

25. Chiu, C. H., Huang, C. C., & Chang, W. T. (2000). The evaluation and influence of interaction in network supported collaborative concept mapping. *Computers & Education, 34*(1), 17-25. Retrieved from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.595.3128&rep=rep1&type=pdf

26. Chicioreanu, T., & Litoiu, N. (2012). The integration of concept maps in the teaching activity. SWOT analysis of the applications existing online dedicated to the elaboration of concept maps. *Elearning & Software for Education, 1*(1), 95-103. doi:10.5682/2066-026X-12-015

27. Chularut, P., & DeBacker, T. K. (2004). The influence of concept mapping on achievement, self-regulation, and self-efficacy in students of English as a second language. *Contemporary Educational Psychology, 29*, 248-263. Retrieved from: https://eric.ed.gov/?id=EJ735622

28. Coady, J., & Huckin, T. (1997). *Second language vocabulary acquisition: A rationale for pedagogy*. Cambridge, England: Cambridge University Press. Retrieved from: https://books.google.es/books?hl=es&lr=&id=_g0eSfesA-0C&oi=fnd&pg=PP9&dq=Second+language+vocabulary+acquisition+&ots=Bfo3OA3RwW&sig=NWM95rdQU2SN5LLG5M4p6m34Wjw

29. Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*. Academic press. Retrieved from: https://books.google.es/books?hl=es&lr=&id=rEe0BQAAQBAJ&oi=fnd&pg=PP1&dq=Statistical+Power+Analysis+for+the+Behavioral+Sciences&ots=sv-VOxOWqc&sig=Arqw9FYhOkg0vcCDlptw1L4cF3w

30. Dias, R. (2011). Concept maps powered by computer software: A strategy for enhancing reading comprehension in English for Specific Purposes. *Revista Brasileira de Linguística Aplicada, 11*(4), 896-911.

31. Duke, N. K. (2000). 3.6 minutes per day: The scarcity of informational texts in first grade. *Reading Research Quarterly, 35*, 202-224. Retrieved from: https://eric.ed.gov/?id=ED432750

32. Echevarría, J., Vogt, M., & Short, D. (2008). *Making content comprehensible for English learners*. Boston, MA: Pearson Education, Inc. Retrieved from: https://www.tesl-ej.org/wordpress/issues/volume17/ej67/ej67r4/

33. Edwards-Groves, C., & Kemmis, S. (2016). Pedagogy, Education and Praxis: Understanding New Forms of Intersubjectivity through Action Research and Practice Theory. *Educational Action Research, 24*(1): 77–96. doi: doi.org/10.1080/09650792.2015.1076730

34. Eppler, M. J. (2006). A comparison between concept maps, mind maps, conceptual diagrams, and visual metaphors as complementary tools for knowledge construction and sharing. *Information visualization, 5*(3), 202-210. Retrieved from: http://blogs.commons.georgetown.edu/cctp-850-spring2010/files

/A-comparison-between-concept-maps-mnd-maps-conceptual-diagrams-and-visual-metaphors.pdf

35. Ermis, S. (2008). Using graphic organizers to facilitate elementary students' comprehension of informational text. *College Reading Association Yearbook*, 29, 87-102. Retrieved from: https://pdfs.semanticscholar.org/9ebf/797883a833b7ab3e9e86759e312ad33de4b9.pdf
36. Fadwa, A.-J. (2010). *Teaching the receptive skills.* Retrieved from https://old.uqu.edu.sa/files2/tiny_mce/plugins/filemanager/files/4281126/receptive_skills.pdf
37. Freedman, L. (2012). *Reading to write: Summarizing.*Retrieved from https://advice.writing.utoronto.ca/researching/summarize/
38. Gamboa-González, Á. (2017). Reading comprehension in an English as a foreign
39. language setting: Teaching Strategies for Sixth Graders Based on the Interactive Model of Reading. *Folios*, 45, 159-175. Retrieved May 26, 2019, from http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0123- 48702017000100012&lng=en&tlng=en
40. Gerst, E. H., Cirino, P. T., Fletcher, J. M., & Yoshida, H. (2015). Cognitive and behavioral rating measures of executive function as predictors of academic
41. outcomes in children. *A Journal on Normal and Abnormal Development in Childhood and Adolescence, 23*(4), 381–407. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4912460/
42. Gil-García, A., & Villegas, J. (2003). *Engaging minds, enhancing comprehension and constructing knowledge through visual representations*. Retrieved from: https://eric.ed.gov/?id=ED480131
43. Glenberg, A. M. (2011). How reading comprehension is embodied and why that matters. *International Electronic Journal of Elementary Education, 4*(1), 5-18. Retrieved from https://files.eric.ed.gov/fulltext/EJ1070457.pdf
44. Griffin, C. C., Malone L. D. & Kameenui E. J. (2010). Effects of graphic organizer instruction on fifth-grade students. *Journal of Educational Research, 89*(2), 98-107. Retrieved from: https://www.tandfonline.com/doi/ref/10.1080/00220671.1995.9941200?scroll=top
45. Hoffmann, K. F. (2010). *The impact of graphic organizer and metacognitive monitoring instruction on expository science text comprehension in fifth grade students*. (Doctoral thesis). Retrieved from: https://repository.lib.ncsu.edu/handle/1840.16/6198
46. Houghton Mifflin Harcourt. (2017). *Journeys.* (Vol. 1). Florida, United States: Fountas