Using interactive graphical and technological strategies for EFL reading comprehension: A case study involving engineering students[1]

Uso de estrategias gráficas, tecnológicas e interactivas para la comprensión lectora en EFL: un estudio de caso que involucra a estudiantes de ingeniería

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Abstract

This qualitative case study engaged a group of engineering students in the use of interactive graphical and technological strategies called interactive graphic organisers (IGOs). IGOs are computer software that provide graphic organising support in order to improve the level of reading comprehension among users. The participants were asked to use three different types of IGOs: cause and effect, a sequence of events, and pros and cons while reading texts. Survey data was gathered through an opinion survey with the intention of collecting and evaluating the students' perceptions of the use of the IGO software. Findings revealed that most of the learners' opinions expressed that the use of IGOs was effective. Engineering students also expressed that they would have liked more opportunities to use this software. They felt that by using IGOs, they not only improved their reading scores, but also enjoyed their experience using new strategies via the software.

Keywords: engineering students, English reading comprehension, interactive graphic organiser, strategies, technology.

Resumen

Esta investigación cualitativa da cuenta del uso de un software con estrategias gráficas, interactivas y tecnológicas, llamado OGIs (organizadores gráficos interactivos), por parte de un grupo de estudiantes de ingeniería. OGI es un software para organizar textos en forma gráfica que mejora el nivel de comprensión lectora de los usuarios. Los participantes utilizaron tres tipos diferentes de OGIs mientras leían los textos, causa y efecto, secuencia de eventos y ventajas y desventajas. La información se recolectó por medio de una encuesta de opinión con la finalidad de recoger y evaluar su percepción sobre el uso del software OGI. Las respuestas revelaron que la mayoría de los estudiantes de ingeniería percibieron el uso de este software como efectivo. Ellos sintieron que usando los OGIs no sólo mejoraron sus notas en lectura, sino que también disfrutaron la experiencia que tuvieron utilizando este nuevo software de estrategias gráficas.

Palabras clave: organizador gráfico interactivo, estrategias, tecnología, comprensión lectora en inglés, estudiantes de ingeniería.

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[1]This article is based on my master's thesis which was submitted as a final requirement for the Master's program in Linguistics called "A study on the effects of the use of Interactive Graphical and technological strategies software in the reading comprehension process of a group of engineering students in the context of English as a Foreign Language classroom" (April, 2013).

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Introduction

When learning a second or foreign language there are several skills involved. Saville-Troike (2006) lists two dimensions, receptive (reading and listening) and productive (writing and speaking). The first is conveyed by the written mode and the latter by verbal communication. From these, reading is a crucial skill for students of English as a second language (ESL) and English as a foreign language (EFL) because it may lead to greater development in other academic areas, and because many students believe that reading is the most essential skill to master (Anderson, 1999). In order to help students become better readers, as Mikulecky (2011) argues, teachers of English as a second and foreign language need to emphasize teaching skills because this focus will allow students to better comprehend English language texts. Grabe (2009), among other researchers, has examined the effectiveness of instruction of a number of different strategies to improve reading comprehension, for example, identifying important information, making guesses about unknown words and building main-idea summaries.

The Chilean school curriculum emphasizes receptive skills, i.e. reading and listening, for both primary and secondary students. In the case of this study, the specific context is the engineering faculty of a state-funded university in Santiago. Two semesters of English language are taught, one of which is devoted to reading and writing. In relation to English language in Chile, statistical data shows that only 2% of adults can communicate clearly in English; however, not at an advanced level. Moreover, only 11% of secondary-level Chilean students are able to obtain a Basic English certificate according to the results of the first Chilean English test based on the Test of English for International Communication (TOEIC, 2012).

In their guidelines for teaching English, the Ministry of Education of Chile (MINEDUC) indicates that 40% of EFL instruction should be devoted to English reading comprehension due to the growing amount of information that students can access, most of which is technical in nature (McKay, 2003). With this emphasis on reading instruction, teachers need to consider how to support readers to be suc-cessful, and reading strategy instruction is at the heart of this work. A number of researchers, including Grabe (2009) suggest using graphic organisers to improve reading comprehension.

In addition, the rapid expansion of the new technologies has allowed the use of software to help students use graphic organisers to organise their knowledge. In this particular case study, Chilean computer software was used.

Thus, this study was carried out with the purpose of ascertaining whether a new graphical strategy could be introduced in order to help engineering students achieve the goal of being able to read in English and finding specific information in brief, simple texts. Becoming better and more efficient readers can be crucial for students when they are studying in a discipline and preparing to begin their careers. They need to be able to read another language which could help them to get a job of a higher standard. The present study was also intended to analyse the effectiveness of the use of the interactive graphical and technological strategies in order to gather more evidence to support the claim that they enhance students' English reading ability. Moreover, this study aims to address a further notion: whether or not the use of these interactive graphical and technological strategies could have the potential for making the input more comprehensible and, thus, facilitating engineering students to improve their EFL reading ability.

As such, the present study was guided by the following research question: Do engineering university students perceive the use of interactive graphical and technological strategies in the context of EFL reading as effective?

Theoretical Framework

Reading is defined as a complex mixture of rapid, efficient, comprehending, interactive, strategic, flexible, purposeful, evaluative, learning, and linguistic processes (Grabe, 2009, p.14). Furthermore, reading comprehension is the process of extracting and constructing meaning in a simultaneous way and includes three components: (a) the reader who is

the person who comprehends the text, (b) the texts which are the written symbols to be comprehended, and (c) the activity which is the action the person carries out in order to comprehend the text. These three components are interrelated and such interaction is the determining factor to create successful reading comprehension (Polselli & Snow, 2003).

On the other hand, strategies and metacognition are discussed by Lems, Miller, and Soro (2009). The former is defined as intentional actions that a reader takes to create and enhance his or her own comprehension, and the latter as consciousness of the reader's own thinking and process of learning. Metacognition is separated into three categories: planning, monitoring, and evaluating one's own understanding. When the learner reads, metacognitive strategies help the reader to be prepared for a reading assignment. Those reading strategies include fix-up strategies utilised when comprehension fails, such as the case of rereading or using graphic organisers for pre, post, and during reading exercises.

Beyer (1987) proposed an inventory of thinking strategies detailed as follows: (a) to organise their ideas, the students have to: order a sequence of events and compare if there are pros and cons; and (b) to analyse students have to state causes and effects (identify a problem and solutions). In addition, there are metacognitive operations students should have when dealing with a text in English, and include: planning (for example, deciding whether or not to use a dictionary, selecting a strategy to follow and get the meaning of the text), monitoring (realising one's own mistakes and being able to overcome them), and assessing (assessing their own process).

As Grabe (2009) states, the key to good reading either in the first or second language is the effective use of reading strategies. However, the process differs slightly with second language reading strategies since they involve issues that are not included in the first language, such as, mental translations, first language transfer, and the metacognitive advantage of second language readers. Grabe proposes a list of eight different strategies as strong support for English reading comprehension in first and second language. However, as the present study was intended to determine whether engineering university students perceive the use of interactive graphical and technological strategies as effective to improve their level of EFL reading comprehension, only two of those eight strategies are explained further:

1. Monitoring comprehension which refers to strategies the readers use in order to check their comprehension. Although there is little research on this matter in second language, Grabe (2009) identifies eight strategies which are described in Table 1.

2. Graphic organisers (GOs) which, according to Gallavan and Kottler (2007), are visual models that provide the opportunity to both teachers and students to use these tools in order to classify, comprehend, and apply information to achieve an outcome. Lems, Miller, and Soro (2009) explain a graphic organiser as a visualization of the way the knowledge we keep in our minds is stored and as the methods for organising new information. They are valuable organising tools for all students, not only English language learners, because all learners can be helped to cope with lots of information concisely.

On the other hand, new technological tools generated by computers which can be used to improve students' learning include Interactive Graphic Organisers (IGOs). Examples of this type of graphic organiser were developed by VirtuaLab-USACH (University of Santiago, Chile) as methodological tools in order to improve learners' skills and capacities. This software can work in web environments and can be used independently by students or as an activity in any lesson. Examples of this software are shown in Images 1 and 2:

Table 1. Strategies used for comprehension monitoring. Taken from Grabe, 2009, p. 211

1. Have a reason for reading and be aware of it
2. Recognise text structure
3. Identify important and main idea information
4. Relate text to background knowledge
5. Recognise relevance of text to reading goals
6. Recognise and attends to difficulties
7. Read carefully
8. Clarify misunderstandings

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Chilean researchers (López, Ponce, & Quezada, 2010; Ponce, Labra, & López, 2008; Ponce, López, & Mayer, 2012) confirmed that when using these types of organisers, learners' cognitive skills can significantly improve since they not only helped students to get better scores, but also to think more structurally and to keep focused on what mattered.

Reading and technology is a rapid area of expansion and complexity. However, there has been small positive effects in the studies carried out on computer assisted instruction, and as Grabe (2009) suggests "there is, as of yet, only minimal evidence that technology assisted reading instruction significantly improves reading abilities in controlled comparison studies" (p.383). However, the promise of technological tools to enhance reading abilities remains.

On the other hand, there are some concerns about the effectiveness of IGOs that posit the limita-
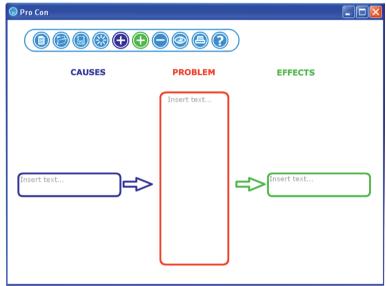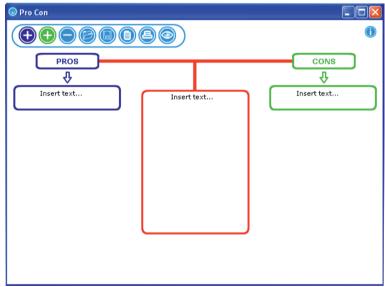
Image 1. Cause and Effect IGO

Image 2. Pros and Cons IGO

tion in generalizability from research studies, the need for research studies with second language (L2) students, and with more extended instructional exposure time (Jiang & Grabe, 2007; Kim, Vaughn, Wanzek, & Wei, 2004; Chang, Sung, & Chen, 2002; Robinson & Kiewra, 1995).

In reply to these concerns, the present study was intended to describe and analyse the effects of the use of interactive graphical and technological strategies in the level of English reading comprehension of a group of students, in order to attain more evidence to support the claim that the use of graphic organisers enhances the level of students' comprehension.

Methodology

The present investigation was carried out as a qualitative case study and, as such, "is not intended as a study of the entire organization. Rather is intended to focus on a particular issue, feature or unit of analysis" (Noor, 2008, p.1602). Furthermore, the case study in the present investigation is descriptive because, as Baxter and Jack (2008) explain, it is used with the purpose of describing an intervention and the real-life context in which it happened. This case study was carried out in order to examine the students' perceptions of the use of interactive graphical and technological strategies in the context of EFL reading. It collected qualitative data from a survey in order to describe and analyse the students' opinions regarding the use of the IGO software which will be explained in the section titled data collection.

The specific context of this study is an engineering faculty of a state-funded university in Santiago in which two semesters of English language are taught, one of which is devoted to reading and writing. Each teacher follows a syllabus with an emphasis on technical information and it is expected that when students finish the course, they should be able to read and find specific information in short and simple texts.

Participants

The sample in this study is considered to be non-probabilistic because the participants were purposefully chosen as the researcher taught in the engineering faculty of the university. The participants were 26 undergraduate Spanish-speaking students from the engineering faculty of a state-funded university in Santiago. Among the majors they studied were mining, civil, mechanical, and electrical engineering. They ranged from 20 to 25 years old, including 4 females and 22 males. They were enrolled in an English course with an emphasis on reading and writing which had six contact hours, three days a week. This course is one pre-requisite for the subsequent oral production course in the compulsory sequence they had to fulfil. The participants studied in a computer laboratory at the university with the aim of using the new strategy. The participants were considered to be pre-intermediate according to a placement test given initially as an entry requirement. In terms of the Common European Framework, the students were placed in an A1 level. Due to the fact that the majority of the participants lack proficiency in English, most of them decide to take this course when they are in the last years of their major which, according to them, is a limitation as they have not studied English since they left school.

Data collection

Six different texts were selected which were similar in reading difficulty level, were about the same length, and were similar in type of content and text structure. The contents were related to the engineering discipline, ESP (English for specific purposes). The texts were taken from the following books: "Cambridge English for Engineering" (CUP) and "Oxford English for Careers. Technology. Start making connections" (OUP). Some of the tittles included: Solar Towers, The Car of the Future and We Have a Problem (The true story of Air Transat Flight 236). Given that the texts dealt with the strategies of identifying cause and effect, sequence, and advantages and disadvantages (pros and cons), the corresponding IGO strategies were chosen. Additionally, in order to understand each one of the texts given to the students, the thinking strategies and the metacognitive operations from Beyer's proposal were employed.

At the end of the training which is explained in the next section, a survey was administered in order to collect the engineering students' perceptions of the use of IGOs. This survey was adapted from a study carried out by Lowerison, Sclater, Schmid, and Abrami

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(2006), which analysed students' perception regarding the effectiveness of computer technology use in post-secondary classrooms, with eight areas to be examined (students characteristics, learning experiences, learning strategies, instructional techniques, overall perceived effectiveness, computer use in course, perceived effectiveness of computer and personal computer use). However, for the purpose of this study, only four were chosen and adapted to fulfil the objective. All of the survey' statements were translated into Spanish in order to avoid language comprehension problems. This survey would allow collecting the students' opinions on the use of the IGO software. With this objective, the next sections provide some examples of the 27 statements that students had to choose in order to assess them according to the level of importance they gave them from A to E (being A "strongly agree" and E "strongly disagree"):

-Learning experiences: "I felt I had the control of my learning" (Sentí que tenía el control de mi aprendizaje), "I learnt basic concepts and main ideas" (Desarrollé conocimiento sobre conceptos básicos e ideas principales).

-Learning strategies: "I used organising strategies, such as summarise and take notes about what matters in the text" (Utilicé estrategias de organización, tales como crear resúmenes y tomar notas de lo más importante).

-Overall effectiveness: "Actually, I learnt a lot in this course" (En general, yo aprendí mucho en este curso), "My interest in English language has increased" (Mi interés en el idioma inglés ha aumentado).

-Use of the new technological strategy as effective, which was created according to the graphical and technological strategies used: "organisers helped me to learn the content better" (El uso de los organizadores gráficos me ayudó a aprender mejor el contenido), "The use of graphic organisers facilitated my learning" (El uso de los organizadores gráficos facilitó mi aprendizaje).

For more information pertaining to the survey, see Appendix A.

Procedures

A training session was prepared and scheduled in order to examine the students' perceptions of the use of interactive graphical and technological strategies in the context of EFL. Such training consisted of six sessions over the course of two weeks, with three classes per week in which students carried out several learning activities on reading comprehension using different interactive graphic organisers (cause and effect, sequence, and pros and cons). This training lasted between 50 and 60 minutes each. It was carried out between October and November in 2012, during regular second language classes which is detailed in Table 2

The researcher explained to the students that although the participation in the study was voluntary, their willingness and subsequent answers were crucial to help understand whether this new strategy was useful for teaching EFL reading comprehension in the engineering context. As a way of motivating the participants, this intervention would be part of their course, since at the end they would receive extra credit for participating. The corresponding students' consent was gathered on a list.

Two days before the training, students received explicit instructions on how to connect to the online platform called Virtualab where the IGO software was placed and also how to use it. Please see Image 3 for an image of the main page of the Virtualab platformThe students were exposed to several learning activities dealing with reading comprehension using these IGOs with the texts explained beforehand. As interactive graphic organisers are computer software, before starting the first session, the students were trained shortly on how to download and use them

Table 2. Learning strategies

Session	Activity
1	Identifying Causes and effects
2	Organization - Sequence of events
3	Identifying Causes and effects
4	Organization - Sequence of events
5	Identifying pros and cons
6	Identifying Causes and effects

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within the platform (between 10 and 20 minutes). These sessions were carried out in a computer laboratory at the university in order to use the IGO software and save the corresponding student's answers for future analysis. Table 3 describes the steps to be followed during the training:

Image 3. Main page of the Virtualab Platform

Table 3. Description of the steps followed during the training

IGOs strategy

First part (time expected: 5-10 minutes).

Activity: Warming up asking the students a question related to the topic.

Second part (time expected: 25-30 minutes)

Activity: Reading a text.

Procedure:

1- The students received a short text, printed in handouts, one per student. The subject of the text was related to their study's area (engineering).

2- The students read the text silently once, to get acquainted with it.

(If students needed to check vocabulary, they were allowed to use computer and look for the words in the online dictionary proposed by the teacher or any other they want to use).

3- A second reading, aloud, was done by either the teacher or individual students, or both, in order to clarify vocabulary and understand main ideas.

Third part (time expected: 15-20 minutes)

Activity: Exercises.

Procedure:

1- Students were asked to access the Moodle platform (called Virtualab) in order to get the instructions and the corresponding IGOs for doing the exercises for each lesson. For example, depending on the given text, students were asked to:

- identify a problem in order to determine its causes and effects

- identify a sequence of events

- identify the advantages and disadvantages

2- Students opened the corresponding IGO, for example, cause and effect IGO.

3- Individually, students filled the answers in the IGO according to the text.

4- Students saved their answers on the computer.

5- Students uploaded the answer in the platform.

6- Finally, the teacher collected all the files for future analysis.

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Findings and Analysis.

Although all students wanted to participate, not all of them were able to participate in every session for a number of reasons such as illnesses and examinations in other subjects. Despite this fact, those students who did participate in most of the sessions may have received benefits of the new strategies. From those participants, eight students had the opportunity to use all of the IGOs. Consequently, only those participants were included in this research study. The quantitative analysis of the survey results showed that concerning the first section (learning experiences), most of the students strongly agreed that they took advantage of available resources such as the computer and the use of online dictionaries for clarifying vocabulary. Regarding the second section (learning strategies), for example in statement 10, "I used organizational strategies such as creating outlines and taking note of the most important ideas" which showed that most of the students used organizational strategies, such as those mentioned above, which they had not used before the training. Regarding the third section (effectiveness of the process), in statements 16, "overall, I learned a lot of this course," and 17, "my interest in English language has increased" students agreed that they learned during the activities and also that their interest in learning English increased, which could be paramount to improve the poor Chilean English scores mentioned in the introduction. The fourth section related to the use of the new technological strategy showed that students agreed that the IGOs were effective when used for the reading comprehension purpose in English, as shown in Figures 1, 2 and 3.
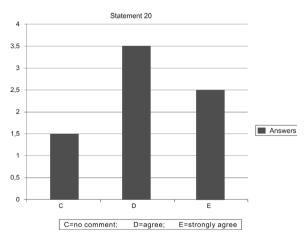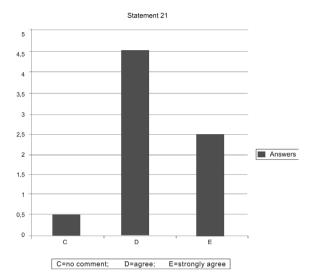

Figure 2. Statement 21: "Sequence IGO was effective"

Furthermore, regarding whether the use of graphic organisers helped participants to better learn the content, the learners agreed with this statement. See Figure 4

The last assertion was intended to determine whether or not the participants agree that the use of interactive graphic organisers facilitated their learning. As can be seen in Figure 5, most of the participants agreed on this issue.

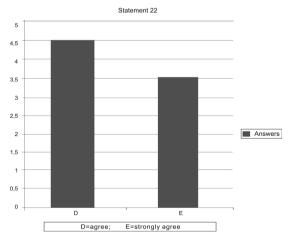On the other hand, for the qualitative analysis, from the thoughtful and insightful students' com-

Figure 1. Statement 20: "Cause and Effect IGO was effective"

Figure 3. Statement 22: "Pros and Cons IGO was effective"
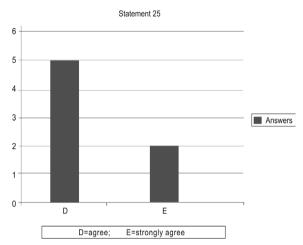
Statement 25

D=agree;   E=strongly agree

Figure 4. Statement 25: "The use of the graphic organisers helped me to learn the content better"

ments which were considered as highly valuable and relevant to the objective of the study, some of them were translated as follows: in section 1: "the learning was optimal…", there was excellent feedback between students and the teacher…" Section 2: "I have improved the command of English…", "it was effective, my English comprehension improved and I learned to analyse in a clearer way the topic studied…." Section 3: "it was effective, my English comprehension improved…", "it has increased my interest in learning languages, not only English, because I have felt more confident in my capacities, thanks to the big encouragement and feedback given by the teacher." Section 4: "I don't use much these graphical strategies, however, for learning and
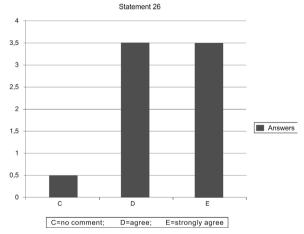
Statement 26

C=no comment;   D=agree;   E=strongly agree

Figure 5. Statement 26: "The use of graphic organisers facilitated my learning"

comprehension purposes, they have been effective," "I found very useful this work proposal, something novel and very participative for students," "it is good due to the fact that for people like me from whom English is difficult, it is an easier way to understand how ideas are ordered," "the use of the technological strategy is more efficient since the class is more interactive and it calls the student's attention."

Taken the two (from the six) strategies proposed by Grabe (2009) and explained in this study, these students did monitor their comprehension successfully because they clearly expressed that they felt they had the control of their learning process and not the instructor. They could identify main ideas, attend to difficulties and thus, clarify misunderstandings.

In sum, these findings provide concrete evidence of the effectiveness of the use of IGOs in the EFL reading comprehension context. Furthermore, they support the findings gathered by López, Ponce, and Quezada (2010), Ponce, Labra, and López (2008), and Ponce, López, and Mayer (2012), confirming that when these types of organisers are used, the students' cognitive skills can improve considerably because IGOs not only help students to get better grades, but also to organise their thoughts and, thus, to remain focused on main ideas. Additionally, their opinions demonstrated that they gained confidence and learned a new way of organising their ideas.

Conclusions

Although not significant due to the sample, the results from the present study confirm the research question: Do engineering university students perceive the use of interactive graphical and technological strategies in the context of EFL reading as effective? Hence, those students perceived the use of IGOs in the context of EFL reading as effective and efficient, according to what students expressed themselves.

They also expressed that they wanted more opportunities to use such IGO software because they not only could improve their scores, but also because they enjoyed the experience they had using the newly proposed strategies of ordering

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a sequence of events, identifying a problem, and comparing pros and cons.

The findings also provide concrete evidence regarding the effectiveness of the use of IGO strategies on this level and with this type of learner. As Grabe (2009) stated, graphic organisers enhance recall of information and promote comprehension of texts due to the fact that such strategies help to organise ideas as was confirmed from the students' comments.

On the other hand, this study provided additional evidence with respect to the improvement of the learners' cognitive skills when using the interactive graphic organiser software, as stated by López, Ponce, and Quezada (2010).

Students were able to use the available resources, such as the computer, they were able to learn how to organise their ideas, and maybe for those students who are not good at learning English, for the first time they were motivated and they could become aware that they were really able to learn.

This research also confirmed previous findings and contributed further evidence that suggests that the interest of this group of students for learning English has clearly increased, because this new strategy gave them the chance to be more autonomous.

Likewise, this study could be considered not only innovative in its topic, but also it should be taken into account as an aid for getting ideas on how to teach the new generation of students commonly referred to as digital natives. It proves the important role that technology plays for assisting reading instruction. Furthermore, it should be taken into account for improving the poor statistical data of the Chilean students by incorporating IGOs into the English curriculum.

Furthermore, as Tang (1992) explains, the use of graphic organisers is recommended not only as support to teach reading in the English language, but also for the positive attitude the students show when using them. Moreover, as Mikulecky (2011) states, teaching English reading skills is key for the EFL learner. This software could help to unite and

incorporate the three components of reader, text, and activity (Polselli, & Snow, 2003). With a clear teacher's objective and good planning, the reading process could be successful as demonstrated in this study. In addition, IGOs could help when reading comprehension fails, so students could benefit from their use (Lems, Miller, & Soro, 2009) by organising and getting the main ideas of a text. Therefore, the fix-up strategies were useful for the students. They felt confident and able to work in their learning process, according to what they wrote in their comments.

Regarding the limitations observed in this study, there is no doubt that the number of sessions was very few. It was not only perceived by the researcher, but also by the students. The other concern was that of attendance, which must be considered in order to obtain a bigger sample for future studies, thus, the results could be generalised. Nevertheless, the topic studied needs further research. Reading comprehension within English for specific purposes would benefit from the use of interactive graphic organisers with a systematic programme.

Finally, as a summary of the benefits of graphic organizers, instructors should keep in mind that graphic organisers have two main strengths, clearly identified in this study, and that they are interesting and motivating tools for students. They are easy to use and provide opportunities to enjoy and increase the experience of learning, in this case, English as a foreign language.

References

Anderson, N. (1999). Exploring second language reading: Issues and strategies. Washington: Heinle & Heinle Publishers.

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. The Qualitative Report, 13(4), 544-559.

Beyer, B. (1987). Practical strategies for the teaching of thinking. Boston: Allyn and Bacon, Inc.

Chang, K., Sung, Y., & Chen, I. (2002). The effect of concept mapping to enhance text comprehension and summarization. The Journal of Experimental Education, 71(1), 5-23.

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Printed ISSN 0123-4641 Online ISSN 2248-7085 • January - June 2014. Vol. 16 • Number 1 pp. 29-39.

Gallavan, N., & Kottler, E. (2007). Eight types of graphic organizers for empowering social studies students and teachers. Social Studies, 98(3), 117-128.

Grabe, W. (2009). Reading in a second language: Moving from theory and practice. New York: Cambridge University Press.

Jiang, X., & Grabe, W. (2007). Graphic organizers in reading Instruction. Reading in a Foreign Language, 19(1), 1-24.

Kim, A., Vaughn, S., Wanzek, J., & Wei, S. (2004). Graphic organizers and their effects on the reading comprehension of students with LD: A synthesis of research. The Journal of Learning Disabilities, 37(2), 105-118.

Lems, K., Miller, L., & Soro, T. (2009). Teaching reading to English language learners: Insights from linguistics, 8, (170-189). New York: Guilford.

López, M., Ponce, H., & Quezada, R. (2010). Use of interactive graphic organisers for dveloping cognitive skills in higher education. International Journal of Digital Society, 1(2), 67-75.

Lowerison, G., Sclater, J., Schmid, R., & Abrami, P. (2006). Student perceived effectiveness of computer technology use in post-secondary classrooms. Computers & Education. 47, 465-489.

McKay, S. (2003). Teaching English as an international language: The Chilean context. ELT Journal, 57(2), 139-148.

Mikulecky, B. (2011). (2nd Ed.) A short course in teaching reading, 2, (39-46). White Plains: Pearson and Longman.

Noor, K. (2008). Case study: A strategic research methodology. American Journal of Applied Sciences, 5(11), 1602-1604.

Polselli, A., & Snow, C. (2003). Rethinking reading comprehension. New York: Guildford Publications, Inc.

Ponce, H., López, M., & Labra, J. (2008). Organizadores gráficos interactivos. In Farias, M. and Oblinovic, K. (Eds.) Aprendizaje multimodal – multimodal learning. Publicaciones Facultad Humanidades, USACH.

Ponce, H., López, M., & Mayer, R. (2012). Instructional effectiveness of a computer-supported program for teaching reading comprehension strategies. Computers & Education 59(4), 1170-1183.

Robinson, D., & Kiewra, K. (1995). Visual argument: Graphic organisers are superior to outlines in improving learning from text. Journal of Educational Psychology, 87 (3), 455-467.

Saville-Troike, M. (2006). Introducing second language acquisition. New York: Cambridge University Press.

Tang, G. (1992). The effect of graphic representation of knowledge structures on ESL reading comprehension. Studies in Second Language Acquisition, 14 (2), 177-195.

TOEIC. Lograr dominar el inglés es tarea pendiente de los chilenos. Retrieved from:http://toeic.cl/2012_/08/07/lograr-dominar-el-ingles-es-la-tarea-pendiente-de-los-chileno

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