9. Breaking the rules to improve reading comprehension in hybrid environments

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Resumen

El desarrollo de habilidades de comprensión a través de la comunicación en una lengua extranjera es un objetivo difícil de alcanzar debido a que los aprendientes constantemente se sienten temerosos de comunicarse usando la lengua meta. Esto requiere que los docentes innoven sus métodos de enseñanza con técnicas y estrategias que se alejen de lo ordinario; el pensamiento visual podría ser esa estrategia que permita que el pensamiento se haga visible. Además de la innovación, la educación pospandemia demanda promover la interacción de los estudiantes entre ellos y con los objetos de aprendizaje, físicos o virtuales, en diversas combinaciones de modalidades. Este trabajo presenta un estudio exploratorio, *en proceso,* que cubre todos estos aspectos.

Palabras Clave: *comprensión de lectura, pensamiento visual, hibridad, interactividad,* TIC.

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Abstract

Developing comprehension skills through communication in a foreign language is a hard goal to achieve for learners often feel afraid to speak using the target language. This requires for teachers to innovate their teaching methodologies with techniques and strategies which can be out of the ordinary, such a strategy could be visual thinking, which allows to make thinking visible. Besides innovation, post-pandemic education requires to promote students' interaction among themselves and with learning objects, physical or virtual, in diverse modalities combinations (hybridity). This paper presents an ongoing exploratory study that copes with all these requirements.

Keywords: *reading comprehension, visual thinking, hybridity, interactivity, ICT.*

Résumé

Développer des compétences de compréhension par la communication dans une langue étrangère est un objectif difficile à atteindre car les apprenants ont souvent peur de parler en utilisant la langue cible. Cela nécessite pour les enseignants d'innover leurs méthodologies d'enseignement avec des techniques et des stratégies qui peuvent sortir de l'ordinaire, une telle stratégie pourrait être la Pensée Visuelle, qui permet de rendre la pensée visible. Outre l'innovation, l'éducation post-pandémique nécessite de favoriser l'interaction des élèves entre eux et avec des objets d'apprentissage, physiques ou virtuels, dans diverses combinaisons de modalités (hybridité). Cet article présente une étude exploratoire en cours qui répond à toutes ces exigences.

Mots-clés: *Compréhension Écrite, Pensée Visuel, Hybridité, Interactivité,* TIC

Introduction

After more than two years teaching online, the time has come to go back to the classrooms and retake face-to-face education. This means that teachers have to adapt to a new normality in which they offer new teaching strategies which integrate all the knowledge gained during the health emergency. Post-pandemic education now requires instructors to use the virtual learning objects they elaborated during the pandemic, into hybrid learning environments that include both, physical and virtual materials and resources that allow learners to interact with them and among themselves.

This paper considers the former to develop students' reading comprehension abilities to a higher level and to propose the use of Visual Thinking (VT) and Information and Communication Technologies (ICT), through the use of digital books, to achieve this goal. Research before the pandemic had shown that applying interactivity increased students' engagement and results in teaching environments. Additionally, with the end of the lockdown, hybridity has been the yield and thus, teachers have to cope with it. Innovation becomes a need again and the use of non-conventional teaching strategies could become the answer; visual thinking might be such a strategy. The different previous elements will be discussed and then, their integration into a Hybrid Virtual Learning Environment.

Reading comprehension

Reading comprehension has been led by cognitive psychological theories through the years and the focus has been put either on the text, the reader, or the context.

In the 1960s, due to behaviorism, the text was the most important part of reading comprehension and only observable outputs were accepted; for example, recalling information, answering to questions, gap filling, etc. Reading was considered a perceptual process; thus, it was assumed that meaning was in the text and that readers had to use the text's visual features to grasp its main ideas. (Pearson and Cervetti, 2015, p. 2)

In the 1970s and 80 cognitivism was the base for reading comprehension theory and the focus was placed on the reader.

Here, the reader gives meaning to the text and then, it is verified on the text. The reader's knowledge of the structure of the language allows him/her to understand the reading contents and finally, to check that interpretation with the text. Metacognition becomes part of the comprehension process. (Pearson and Cervetti, 2015, p. 5).

In the 1980s, constructivism became an important part in reading comprehension, and students had to use their previous knowledge on the reading contents so that they could have an understanding of it. Furthermore, they had to state what they had learned from the reading and add it to their personal knowledge. During this period, instructors had to provide the conditions for students to construct their knowledge.

Later, the focus was placed on the context and readers have to explain how the world was being represented in a text. "They needed to analyze how the specific situations the writer was describing in the text influenced on the reader's understanding. Additionally, readers were asked to explain how the reading contents affected them in their context." (Pearson and Cervetti, 2015, p. 7)

Nowadays, reading comprehension theory seeks to integrate all of the previous approaches to keep a balance among them for the readers to create a mental representation of the text. To achieve this goal, readers have to understand the textual meaning from the reading to use their background knowledge afterwards; and finally, make connections to context to understand the purpose of a text.

Visual thinking

From ancient times, human beings have expressed their thoughts through graphic representations or "drawings". We know about egyptian culture and lifestyle thanks to their hieroglyphics, but this kind of thought manifestations cannot only be found in the past, nowadays, the use of emojis when texting on our phones is very common. We use images to share our thoughts every day visual thinking is a strategy that takes this form of

sharing ideas to develop learners' content understanding, creativity, critical thinking, collaboration, and communicative skills. The term was used for the first time in 1969, when the German psychologist Rudolf Arnheim published his book entitled *Visual Thinking*. In his book, Arnheim (1969, p. 6) states that

> the remarkable mechanisms by which the senses understand the environment are all but identical with the operations described by the psychology of thinking. Inversely, there was much evidence that truly productive thinking in whatever area of cognition takes place in the realm of imagery.

This is that visual perception involves the same cognitive process we do when thinking. He disagreed on the split between sense and thought and mentioned that "it caused various deficiency diseases in the modern man."

Despite Arnheim's in-depth development of his theory in which he included different branches of psychology, philosophy, the arts, and the sciences, it did not get enough support to be used in academic environments. This unfortunate fact did not consider some additional theoretical concepts that support visual thinking's adequacy for education in order to promote better understanding of contents.

Nevertheless, in 2000 Harvard University retook Arnheim's research and launched its Project Zero to *Make Thinking Visible*. "Visual Thinking is a strategy that fosters readers' critical thinking, creativity, analyzing and communication skills, collaborative work, and involvement and participation." (Ritchhart and Perkins, 2008, p. 2)

When readers decide how to represent their understanding from what they read, they develop creativity and critical thinking for them need to think twice what information from the text they want to picture and how as well as to make the adequate associations. Furthermore, they analyze if their visual representation correctly transmits what they intended it for or if it helps them to retrieve the information they want to share. Additionally, they materialize their communicative competence when they explain their images to their classmates or teacher, thus increasing involvement and participation. They achieve this last goal because they fo-

cus on transmitting their ideas and not on the form or forms they are using to reach it.

Ferdinand de Saussure

Ferdinand de Saussure's theory strongly endorses visual thinking use in academic environments. In his *General Linguistics Course*, the Swiss linguist described the communication process and the elements that intervened in it.

Among those elements, he mentioned the linguistic sign, shown in Figure 1, which is bilateral and contains two aspects: the signifier and the signified. The signifier corresponds to the written or spoken word, and the signified is the graphic representation our brain brings up when reading or listening to the signifier and which helps us give meaning to it. (Saussure, 1945)

In Saussure's theory, it is evident the relevance the graphic representation or image has to understand a word or an idea, a fact that was not considered by the psychologists at that time; they thought that visual perception did not involve a cognitive process, so it was not worth to take it into consideration.

Figure 1. *Saussure's Linguistic Sign*

Source: own elaboration.

Saussure's ideas are reinforced with Pavio's (3) Dual-Coding Theory which states that we store information and/or experience in both image and verbal codes simultaneously. Based on this, Huh (2016, p. 2) makes clear that "images function as symbols for general ideas by association with language." Visual thinking sparks learners' use of the language or communication through the images they associate to the ideas they want to communicate; thus, showing their understanding of a text. This shows how relevant it is for us to make meaning from our surroundings.

Let us not forget Piaget's cognitive development stages in which he emphasizes that it takes about twelve years for a child to get into the abstract understanding phase. Before it, children get information from their concrete world, which is what comes from their visual perception. And it is this theory that twins with Saussure's linguistic sign description. Hence most of the information we initially store in our brains comes from a visual concrete context that creates images to understand what the world is and how it works. "Words are abstract and rather difficult for the brain to retain, whereas visuals are concrete and, as such, more easily remembered." (Aisami, 2014, p. 542)

Hybridity

"Since a rapid development of technology has changed the way and context of teaching and learning, the field of language education should prepare to provide balanced multimode instructions." (Huh 2016, p. 5) Hybridity implies to integrate internal and external materials and resources in face-to-face instruction; these can be physical or virtual and enrich learning experiences.

As defined, hybridity can have a great variety of combinations: Blended learning can be an example for it combines face-to-face instruction with virtual work done outside the classroom. Another combination is to use virtual learning objects hosted on a virtual learning environment in a face-to-face lesson; or to have a presentation made from the actual site a process takes place with the rest of the class in the classroom.

Research has shown that the use of instructional technology and ICT in particular in the english language classroom can improve and optimize stu-

dents' language acquisition and substantially motivate them to continue their learning and stimulate their creativity and passion. (Azmi, 2017, p. 1).

Hybridity allows for teachers to offer different learning objects to target diverse learning styles. This diversity gives learners the opportunity to explore various ways to acquire knowledge.

Interactivity

Benjamin Franklin once said, "tell me and I forget, teach me and I may remember, involve me and I learn." This quote perfectly indicates the importance interactivity has in the teaching-learning process. When we involve our students in tasks, they negotiate meaning among themselves which is part of interactivity. "From the study, it was found that the integration of visual pictures with speaking activities helped the ESL students negotiate with one another." (Huh, 2016, p. 5)

Considering Vygotsky's and constructivism's principles, knowledge has to be socialized for it to be sparked in learners. Students' prior knowledge and experiences contribute to better understand contents as well as to enrich them. Thus, class tasks need to provide opportunities for this to happen in the classroom as well as in virtual learning environments. As a matter of fact, students who have had interactivity with virtual learning objects in virtual learning environments have gotten limited results due to the lack of socialization. Hence, tasks need to be created in a way that includes students' interaction among themselves. "Social presence has been found to have a positive effect with foreign language participation in Zoom breakout rooms (i.e., sub-conference rooms)." (Bailey, 2021, p. 3) Virtual learning objects need to go beyond student-object interaction. They must give learners the opportunity to share their online work with their classmates. This will take students to develop communicative skills, which is the goal when learning a language. Visual thinking could be that tool for learners to reach it.

Additionally, Sterns (2012) mentions two main ways to integrate technology in education: "a) tools that serve as a tutor and increase skills, and b) tools that assist students in engaging in the learning activity." (p. 3)Ac-

cording to this classification, the learning objects that will be described in this paper fulfill both categories.

Application

This is an ongoing exploratory study which is being carried out at Universidad Autónoma Metropolitana, Azcapotzalco campus, during the 23-I term. There are three second level classes taking part in the study; two of them are going to use the reading comprehension learning objects and strategy, and the other one will be the control group and will have no access to the materials previously mentioned. This last class has twenty-two students enrolled, the other two make a total of fifty additional ones, thus, the total number of partakers will be seventy-two. Students are between nineteen and twenty-six years of age and are enrolled in one of the different study programs, undergraduate and/or graduate, offered by this unit.

In order to develop students' reading skills in the foreign language, some digital reading tasks (learning objects), which include the visual thinking strategy, have been elaborated. There will be a total of three tasks, and they are hosted on a Virtual Learning Environment specifically created for the purpose, furthermore, they can be used online or in a hybrid modality. The learning objects are portable and can be installed on diverse Virtual Learning Environments. This contributes to what Dreyer and Nel (2003) stated about the use of technology in the teaching of reading comprehension:

In order to meet the reading needs of students in the 21st century, educators are pressed to develop effective instructional means for teaching reading comprehension and reading strategy use. This paper outlines the format and structure of a strategic reading instruction component of an English for Professional Purposes course offered within a technology-enhanced environment. The results indicated that students who received strategic reading instruction in this environment received both statistically and practically significantly higher marks on three reading comprehension measures than did the students in the control group. This was true for successful students, as well as for those considered to be at risk.

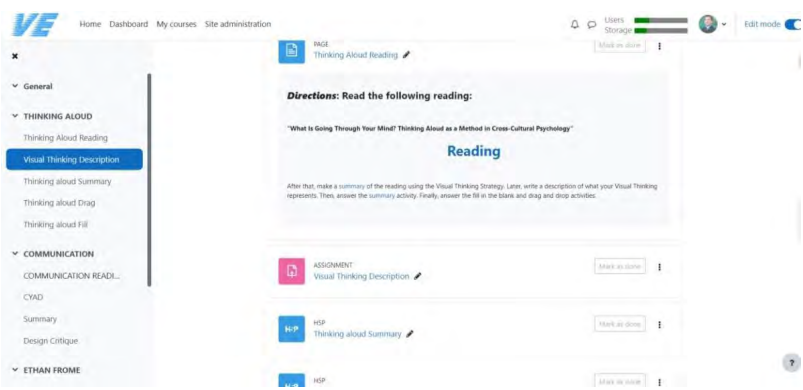
As stated, higher-education educators are trying to cope with a high priority need to satisfy students' professional development and current educational requirements. These materials foster independent work for students can access them 24/7 and work at their own pace if that decision is taken. As shown in Figure 2, If used in a hybrid form, they promote socialization of the read information and give students the opportunity to compare their understanding with their peers and start meaning negotiation by using Visual Thinking and their communicative abilities. At this point, participants can inquire about additional information on their peers' graphical representations to have a wider idea of their point of view and enrich their own understanding of the text.

They will be assigned the first reading task before being administered the first partial exam, and two more tasks during the second half of the course which will have to be answered before the final exam.

The results in the reading comprehension part of the exams will be compared with the ones gotten by the control group to determine if there are any differences among them and find out explanations on the observations. For the qualitative part of the study, a short survey will be conducted to get students' opinions on different aspects of the tasks such as ease of access, difficulty, functionality, and how much they contribute to the skill.

If there is not an opportunity to have a face-to-face session for students to perform the previous tasks, then an asynchronous video discussion app can be used to fulfill the socialization requirement and negotiation of meaning.

Figure 2. *Types of reading comprehension activities on the platform*

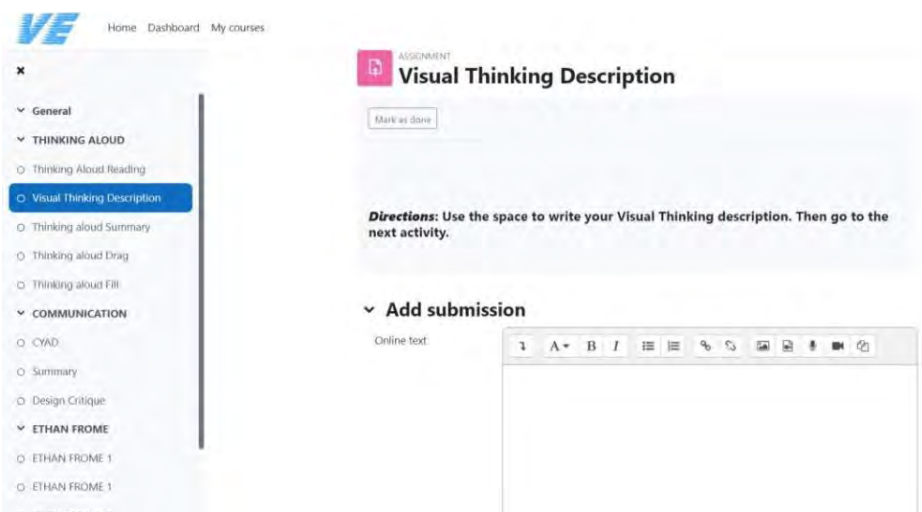


Source: own elaboration.

As observed, some of the tasks focus on developing traditional reading comprehension skills; however, some other interactive tasks have been developed with the use of non- traditional strategies such as visual thinking for students to share their knowledge and compare their understanding of the text. After learners have made their summary from the reading using the visual thinking strategy and have explained, orally, their visual thinking product to some classmates; they have to write a description about what their visual thinking yield represents; this will have to be done on the space allocated for such a purpose on the virtual environment shown in figure 3.

This task allows the students to select and retrieve the information from their products, and it also gives them the opportunity to include information they might have forgotten and that they remembered when they socialized their understanding. All these tasks contribute to expanding students' initial comprehension from the reading and to clarify aspects where they have doubts. By communicating their ideas in written form, students not only work on their understanding, but on the use of the language as well.

Figure 3. *Writing space on platform*

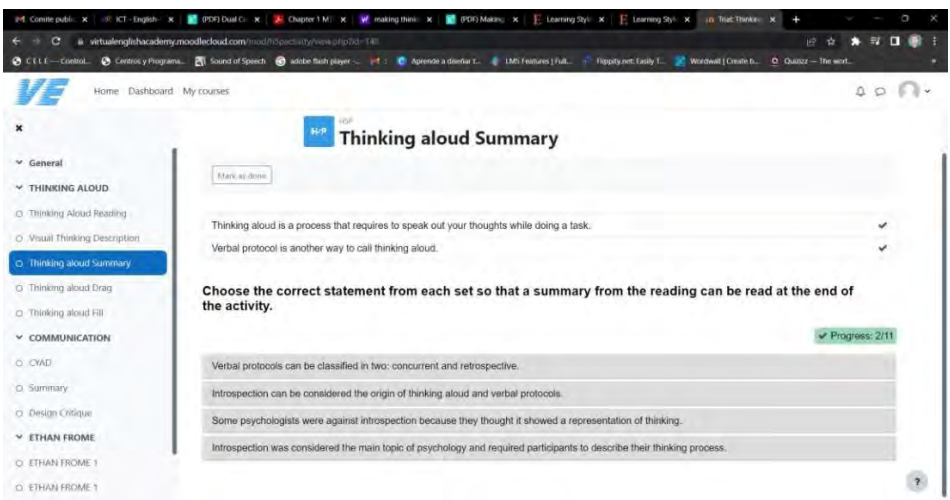


Source: own elaboration.

After that, students will answer a series of tasks which can be considered as the evaluation phase of the process for they will have to use the knowledge obtained from the previous tasks. The first of these activities is an interactive summary task, which will require for them to reconstruct the reading in a chronological order as they have to choose the correct piece of information from four options according to the order the information appeared on the reading.

Later, they will answer a Fill in the blanks interactive activity to finally, close their reading session with a drag and drop one. These two final tasks will confirm students have a good understanding of what they read. They have to remember specific information from the Summary task in order to correctly answer the fill in the blanks one. Finally, the drag and drop tasks will consolidate their comprehension level for them have to unscramble sentences from the summary. This task, shown in figure 4, will not only make readers retrieve information from their reading but will make them aware of how the language works and how it is structured, so they can use this ability to understand what they read in a faster way.

Figure 4. *Summary task on platform*



Source: own elaboration.

With the use of these tasks, interaction increases beyond the learning object student one; it allows for student-student, student-students and student-professor interaction, thus permitting the socialization aspect education currently emphasizes, to be further developed.

When these learning objects are utilized in a face-to-face environment, hybridity takes place for different kinds of materials and interaction are combined.

The graphic representation (visual thinking) from the reading shows readers' understanding from the text, for images allow them to explain the reading contents. When readers orally explain about their visual thinking products, they develop communicative skills which later, they will put into written form when writing their graphic representation explanation. Finally, they show their comprehension by answering the interactive tasks which are used as evaluation and consolidation instruments.

Conclusion

As presented, taking readers' comprehension to a higher level requires to integrate several elements during the instructional design phase so that all together offer meaningful learning experiences.

The use of visual thinking strategies contributes to achieve this goal for them allow learners to express their ideas both, in oral and written forms. When students socialize their understanding of a text in verbal form first, putting it on paper becomes an easier task for them already have in their minds the ideas they want to express. Besides, readers focus on content rather than form because their main objective becomes sharing them with their possible readers. Thus, communication becomes an integral part of reading comprehension.

Their creativity and critical thinking skills are further developed for them must select the information they want to share and how they want to represent it, so that they can retrieve it in a more expedited and concrete way.

Finally, all the tasks proposed in this document have the possibility to be used in different learning environments or modalities, which gives great-

er variety to learning settings. The most important point is that teachers are willing to take risks and to use non-traditional teaching strategies.

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