MULTIPLE TEXT READING COMPREHENSION IN SECONDARY EDUCATION

EXPLORING A WAY TO IMPROVE MULTIPLE TEXT COMPREHENSION BY FOSTERING THE STUDENTS TO PAY ATTENTION TO SOURCE INFORMATION OR PROVIDING THEM KNOWLEDGE ON THE TOPIC, ITS IMPACT WHEN READING CONFLICTING MULTIPLE TEXTS, AND THE INDIVIDUAL SKILLS THAT CAN PREDICT THEIR FURTHER PERFORMANCE.

DOCTORAL THESIS WITH INTERNATIONAL MENTION

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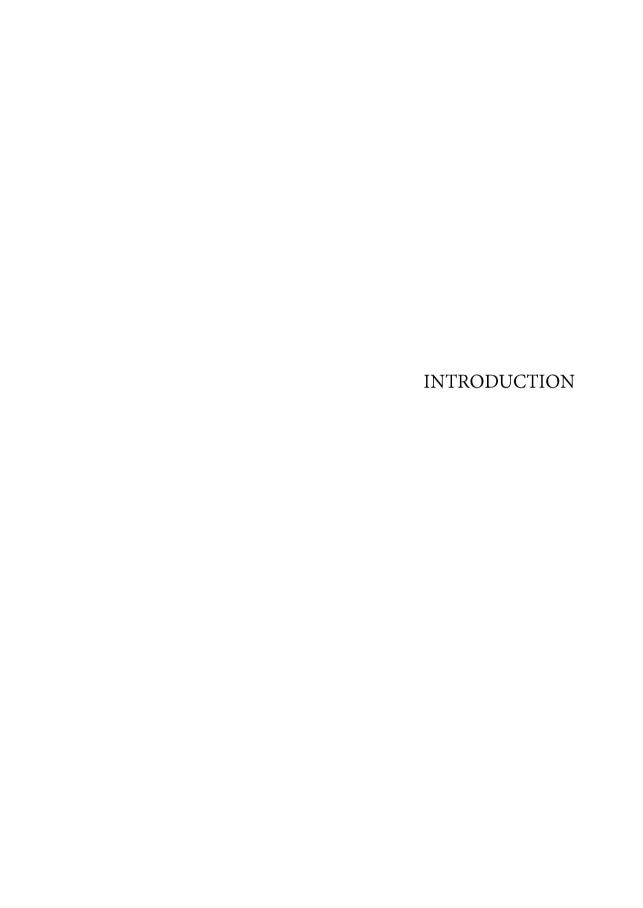DOCTORAL PROGRAMME IN READING AND COMPREHENSION

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INTRODUCTION

"I believe that reading is fundamental to take advantage of all the potential richness that language has. Having that mastery of language helps you to think more clearly, to be able to nuance your thoughts. Nothing enriches the senses, sensitivity, and human desires as much as reading."

Mario Vargas Llosa

Reading has a strong presence in our lives, its comprehension is vital. Reading comprehension is the basis to acquiree a big amount of knowledge through our lives. Reading comprehension in essential during schooling because it is a skill with presence in all the subjects during the entire school period. For example, it is basic to understand a story to answer questions about it. But it is vital to understand a math problem to properly solve it. It is also mandatory to manage reading comprehension to learn the content from the science subjects. Moreover, reading comprehension is present in the development of a large majority of school tasks that require searching for information, reading, and understanding, probably, more than one text. Is therefore important to give

students the necessary skills and aids to handle in the digital world where they are requested, daily, to search for information on several academic and non-academic topics.

When students begin to deal with the reading of texts at the start of school years, they read narrative texts and simple documents that are easily understandable by setting up mainly associative processes. But, as they grow, they are asked not only to understand what they read, but also to learn from what they are reading. For this it is also necessary to put in place deliberate processes to be more strategic with this more complex documents. Even more, as we have mentioned before, today's world requires not only being able to learn from one document but managing several documents to learn about a topic. If we think about a teenager completing a daily school task, it frequently requires searching for the information from the internet, selecting the documents, understanding them and completing the specific product. At this moment, there are on the internet more than 2 billion webpages, of which approximately 200 million are active (https://www.internetlivestats.com/total-number-of-websites/), that offer information about every topic we can imagine. Only searching in google for a common word that can belong to a school topic like "*planet*" offers more than 2.540 million results related to webpages, images, videos…

The amount of information we can found in a click it is almost endless. As we can see, there is so many information that sometimes, when searching for a specific topic and reading several documents about it, we can find that the information we have read is conflicting, that it does not add more information to what we have read before, it just presents an opposite position or point of view. When diving into this world full of information, dealing with multiple texts, sometimes with opposite information or opinions, paying attention to the sources the information comes from is absolutely crucial. Some data obtained by asking the teenagers make evident the big challenge we

must face. The 83.3% of the respondent students in a survey between 12 and 17 years old, confess to have believed in the veracity of a new that they have later discovered to be false (https://www.digimente.org/). One possible way to guide the search of information, the understanding of the documents, together with the integration of the different information found, is by being able to analyse the source the information comes from, by giving them the necessary knowledge and tools to do it. In this line, the present Spanish curriculum for secondary students (https://www.boe.es/boe/dias/2020/12/30/pdfs/BOE-A-2020-17264.pdf), says that the secondary education has to develop in the students abilities that help them to "*develop basic skills in the use of sources of information in order to acquire new knowledge with a critical sense*". It is not only a skill the digital world is demanding; it is also a skill that is officially stablished to be develop through this school period. At the same time, we know that is difficult to understand and be critic when we have not prior knowledge on what we are reading (Scharrer et al., 2019).

Considering the magnitude of these challenges, the present dissertation has three main goals. The first one is to know how secondary students deal with a conflicting multiple text task. As we have previously seen, know a day's getting informed about any topic to achieve an academic or not academic task or goal usually requires reading more than one text, that sometimes do not present consistent information. At this point, knowing how students deal with this kind of reading situations allows us to see what they can do and where do they have difficulties.

The second goal is to explore how a better performance can be promoted by given brief prompts just before reading. We will explore two possible prompts to improve the performance of the students when reading multiple texts. One prompt is guided to pay attention to source information and the other ones is guided to give them basic background knowledge on the content of the texts they are going to read right after.

Finally, the third goal is to study which single-text reading skills assessed at the beginning of secondary education can predict performance on the multiple-text reading task two years later, at the end of secondary education. Identifying these skills can guide work to teach the students even before they encounter the first multiple text tasks.

In order to achieve these goals, a task was designed in which the participants were asked to read a set of texts that contained a conflicting information about the situation of the Rohingyas in Burma, from the side of the Rohingyas and from the side of the government. After reading the texts, they had to write an essay explaining the conflict. In order to analyse the performance of the students in this multiple text task-oriented reading several measures were considered: the notes taken by the students while reading, an essay written by the students after reading and two different tests to assess the general comprehension of the documents and the memory of the sources. It has been analysed the semantic content (importance, relevance and origin of the ideas noted, transcribed and understood), its organization and the attention to source information (also analysing the type of sources and the relevance of the documents they belong to).

The first part of the present dissertation contains the theorical framework, which is formed by five main chapters assuming that reading comprehension, the process of simultaneously extracting and constructing meaning by interacting with a written language (Snow, 2002), is required for almost every academic and non-academic situation and, therefore, it does not end with the acquisition of a fluent decoding or the comprehension of short simple texts. To achieve a high level of master in a complex and difficult domain, as reading comprehension, requires a long-lasting cumulative process (Ericsson, 1996). This cumulative long-lasting process can be explained by three different achievements: comprehending the texts, being able to learn from them and learning from several documents, multiple text comprehension (Sánchez & García, 2021). Thus, chapter
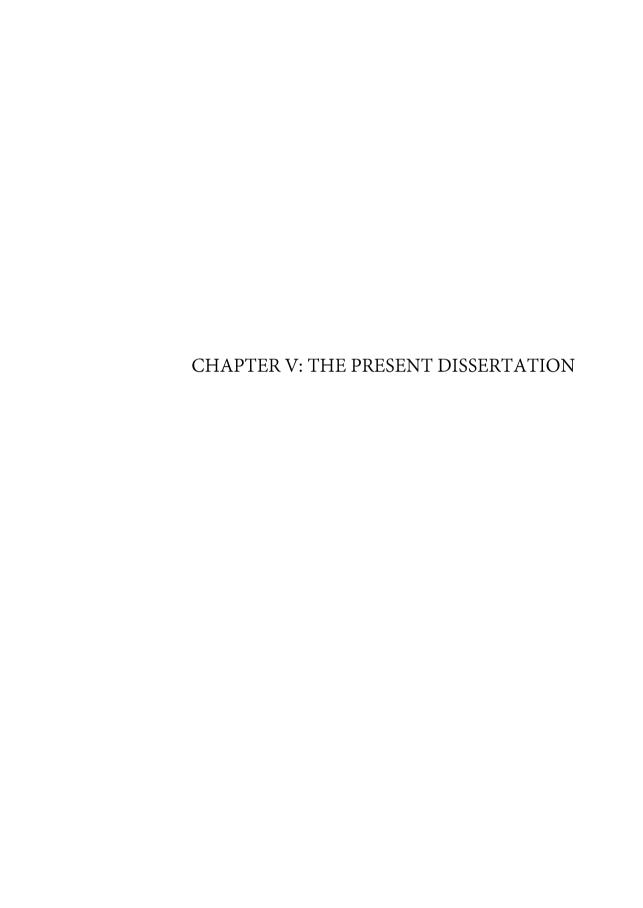
I is dedicated to reading comprehension. In it, we will review the mainly connectionist models that explain the processes by which we give meaning to a text (Kintsch, 1988; McNamara & Magliano, 2009; van den Broek et al., 1999) together with the necessary reading skills required for comprehending the texts. In chapter II we will describe the different strategies that are necessary to display when we want, apart from comprehending the document, learn from it, as for example reading with a specific goal (McCrudden et al., 2010; McCrudden & Schraw, 2007) or selecting and organizing the important information (Meyer, 1985; van Dijk & Kintsch, 1983). In chapter III we will focus on the need of being able to learn from several documents and we will go deeper in the comprehension of multiple documents. In relation to multiple text comprehension, we review the different models and assumptions that have explained multiple text comprehension, putting an eye on the importance of sourcing as a key process to manage, understand and integrate the information (Perfetti et al., 1999; Rouet & Britt, 2011; Braasch et al., 2012; Braasch & Bråten, 2017; Rouet et al., 2017; List & Alexander, 2019). Chapter IV is dedicated to analysing how to improve multiple text comprehension analysing the interventions in sourcing and the importance of prior knowledge. And finally, the theorical framework finishes with chapter V, where the present dissertation is presented with a clarification of the general main goals of the dissertation.

The second part of the dissertation contains the empirical studies that comprise this work: Study 1 (chapter VI) and Study 2 (chapter VII). We know that multiple text task-oriented reading is difficult for secondary students. Accordingly, several long-term interventions have been explored, focusing mainly on increasing the attention the students pay to source information. Nevertheless, we want to know the effect of a short oral prompt, in sourcing (telling them about the importance of paying attention to source information and the different aspects that can be considered) or in basic background

knowledge (by providing them basic background knowledge on the topic), just before reading, on the comprehension of the documents and the attention they pay to source information. The prompt tries to give them a contextualised help, in the specific moment of starting to read the text.

In the second study, presented in chapter VII, it is explored longitudinally the possible single text reading skills that can predict multiple text task-oriented reading. It is analysed, in seventh and eighth grade students the performance on three skills that are rhetorical competence, lexical decision, and single text comprehension, and the predictive effect of these skills on the performance in multiple text task-oriented reading two years later.

Finally, the third part of this dissertation contains chapter VIII. This chapter is dedicated to the main general discussion, as well as the conclusions, limitations, and implications of the present dissertation.

CHAPTER V: THE PRESENT DISSERTATION

"Humans know how to transform the outside world with their mind and will."

José Echegaray

Along the first part of the dissertation, the theorical framework, we have reviewed three different reading challenges that are presented to the students as they progress in school. Starting by for a first chapter dedicated to the comprehension of simple texts. We have reviewed the main reading comprehension processes involved in the comprehension of simple texts, often narrative, and the main skills that are the basis of comprehension. Then we have gone through the strategies that can be carried out to learn from texts, responding the demands of the texts at higher levels. We have also reviewed the rhetorical competence as an important skill at this moment. In addition, we have explored the aspects involved in the multiple text comprehension and the main models related to the comprehension of multiple documents. Finally, we have reviewed the interventions that have been carried out in sourcing and the importance of prior knowledge for text comprehension. This first part of this dissertation finishes with the last chapter: the present dissertation.

We are in a moment where students have access to more information than ever before, and it is quite common that, for every task they have to accomplish or any doubt they have to solve, they search for information and manage information from several documents. Having this in mind, it is important it is important to study how our students perform in multiple text task-oriented reading and how to help them deal with them better. Therefore, this dissertation has three main goals. We want to explore (1) how secondary students deal with a multiple text task that present two opposite versions of a conflict; (2) how a better performance can be promoted by brief prompts directed to paying attention to source information or providing basic background knowledge of the content that facilitates the comprehension of the texts to read; and (3) which single-text reading skills assessed at the beginning of secondary education can predict performance on the multiple-text reading task two years later.

In order to achieve these objectives, we designed two studies with one sample of secondary students. That means that these participants can be placed them at the intermediate level of the pyramid presented by Shanahan and Shanahan (2008, see chapter I). Thus, they are students that read to learn from texts and whose skills are in progress in order to adapt to the difficulties presented by more demanding reading situations. For instance, at this time, they are supposed to read more than on text to solve a request and to pay attention not only to the content but also to the source the information comes from.

We asked these students to read seven texts that presented two opposite visions about a conflict in Burma (the vision from the government and the vision from a minoritarian ethne called Rohingyas) in order to explain the conflict in an essay afterwards with the help of notes taken while reading (if they so wished). As can be seen, this is a type of task that, as far as we know, has not been explored very much. Most of the

studies that use conflicting texts ask their students to defend one side of the conflict (e.g., they have to decide whether muesli snacks are healthy or not (Paul et al., 2018), defend or not chocolate and videogames in children (Florit et al., 2020), or recommend or not to the school director to put energy drinks machine in the building (Kiili et al., 2020). Nevertheless, in our studies, we are not asking participants to defend a side of the conflict presented, but we are asking them to explain the conflict considering the two sides or perspectives.

Taking into account the models reviewed in the previous chapters, we considered that the fundamental processes that students needed to develop in order to successfully solve this task were these four:

1) They have to use the present external resources and the information provided by the context in order to *create a good task model* (Rouet & Britt, 2011; Rouet et al., 2017). The task model would include a clear reading goal in order to achieve the presented task. Having a good task model is vital. Therefore, participants had to understand that their essay should contain both positions of the two conflicting parties (not just one) and only (or mainly) the information relevant to the goal (that which serves to understand or explain the conflict).

2) Participants had to comprehend the ideas of the texts they read, which requires basic cognitive and reading skills (working memory, word recognition, syntactic processes and comprehension), but also more sophisticated ones (metacognitive strategies and rhetorical competence, because the texts were complex and were marked with rhetorical devices that allow the reader to identify how the main ideas are organised in the texts through the use of words as "one characteristic", "one cause...". These signals help the readers to use the structure strategy: recognised the structure of the text to select and organised the important information (Meyer et al., 1980).

3) Participants had to select the relevant information (that which explained the conflict) and discard (or put on the background) the rest. This means that not all the information is relevant to complete the task. Specifically, only two texts (one from each side) contraries in opinion contained the causes of the conflict (from the side of the government: the clashes between the Rohingyas and the government during World War II, the Burmese law under which the Rohingyas are not considered Burmese citizens, and the armed group that has been formed by the Rohingyas; and from the Rohingya: the repression the Rohingyas have suffered after independence from Burma, that Burma does not consider the Rohingya as citizens, and the attacks the government are ordering to the Burmese military against the Rohingyas). The rest of the documents contain complementary information that support one or the other side (for example the textbook text that talks about general characteristics of the country, the testimony of a Rohingya that relates what happened the night that army arrived at his village or the testimony of person from the government that explains the situation under their point of view and to excerpts of official documents that support the situation from each side). We can say that only the information from the essays contraries in opinion is aligned, the important information in the texts is relevant to complete the task (Rouet et al., 2017) with the reading goal (explain the conflict). The important information is the one that is needed in order to understand a text, and the importance of the ideas is determined by the author that can specifically mark them using organization signals ("one cause is…"). The relevant information is the one that is needed to achieve the task and is determined by the reader goal (McCrudden & Schraw, 2007). Rouet and Britt (2011) in the MD-TRACE model considered the importance of relevance in the third step of the model. The model considers relevance assessment according to the topic, if the documents and their units of information are related to the topic of the task, and task relevance, evaluating if the

content of the documents are relevant and accessible for the task or reading goal. When a document has been selected and it is not relevant the reader can review or update the task model or can review what information is needed to engage again in this step process. It the items are relevant then he will move to process text contents. In this step the reader selects and integrates content information from the documents. Although the first step is to assess relevance and them to process the content, both processes are highly related, there are some situations where it is necessary to process the content, read it and understand it, in order to decide whether each specific unit of information is relevant or not to achieve the task (Sánchez et al., in preparation; McCrudden et al., 2011). The RESOLV model (Rouet et al., 2017) considers the creation of a context model that influences the task interpretations of the request and this will determine what is relevant.

4) The participants had to integrate the selected ideas in a coherent way, which in this case means integrating or organising the relevant information from each text into an overall scheme that identifies the two positions and what each of them says. Barzilai et al. (2018) in a recent review about multiple text integration and considering the previous models on multiple text comprehension, defined integration as the process of connecting, combining, or organizing information from different documents to achieve a specific goal (MD-TRACE, RESOLV, IF-MT). A successful integration could be defined as "*creating an organized and coherent representation of overlapping information while marking some information (agreed upon, inconsistent, questionable) as coming from a particular source*" (Bråten et al., 2011, p. 7). In this task of connecting information among different texts, two aspects become specifically important: paying attention to source information and prior knowledge.

In the Study 1 (chapter VI), conducted with 148 students from 9-10 grade distributed in three conditions (one control condition and two experimental conditions)

tried to answer the first two objectives. To answer the first one (how secondary students deal with a multiple text task that present two opposite versions of a conflict) we analysed the performance of the control group in four different tasks: the notes taken while reading, the essay they wrote explaining the conflict between the government and the Rohingyas, a comprehension test and a source test. These tasks allowed us to obtain two types of measures: (a) measures related to the ideas of the texts and (b) measures related to the sources. The ideas (written in the notes, included in the essays or comprehended in the test) were analysed attending to their importance, their relevance for completing the task, their perspective, the texts they belong to and their organisation; whereas the sources (written in the notes, included in the essays or remembered in the test) were analysed considering their relevance, their perspective, the texts they belong to and in addition in the notes the source aspect mentioned.

To answer the second goal (how a better performance can be promoted by brief prompts directed to paying attention to source information or providing basic background knowledge of the content that facilitates the comprehension of the texts to read) each of the experimental groups in Study 1 received different prompts and their performance was compared with each other and with the control group on the same measures as above:

a) One of the experimental groups was prompted to pay attention to source information. This can help them to integrate the information from the different documents because sourcing is especially important when readers find contradicting information (Braasch et al., 2012; Braasch & Bråten, 2017). When several viewpoints on a same topic are explained through different documents, sources can guide they in the process of understanding and the integration of that documents in a coherent mental representation. What prior research have shown is that the spontaneous attention to

source information is very low. Several interventions have been carried out in order to make the students aware of such information when reading. But there is a space between having the knowledge on source information and applying that knowledge in a given situation.

b) The second experimental group was prompted by receiving basic background knowledge on the topic (what can reduce the cognitive load of the task, facilitating the comprehension process, the selection of the relevant information and the integration of the different texts). Prior knowledge seems to contribute multiple text comprehension because it can facilitate bridging inferences that create interconnection and coherence in complex materials (Bråten et al., 2020; McCrudden et al., 2022), in this sense prompting the students with basic background knowledge could also influence in these processes. In our dissertation we think is more appropriate to talk about basic background knowledge because prior knowledge is really elaborated. On the other hand, It has been also explored that topic or basic background knowledge helped the readers on sourcing because the readers that have higher topic knowledge need less effort to comprehend the texts and let free capacity to process source information. When comprehending the text requires less cognitive resources, source information can get more attention (Bråten et al., 2011).

In addition, to control the equality among the three conditions in Study 1, we assessed some of the skills that, as we have seen in the previous chapters, are important for understanding any text (memory, lexical decision, semantic categorization, grammatical knowledge, reading comprehension) and learning from expository texts (rhetorical competence, and metacognitive strategies). At the same time, we studied the moderating role of these variables to find out the characteristics of the learners who could benefit or not from each type of prompt.

Finally, the Study 2 (chapter VII) tries to answer the third goal (to know which single-text reading skills assessed at the beginning of secondary education can predict performance on the multiple-text reading task two years later). To achieve it, we explore, with a subgroup of 59 students, which single-text reading skills assessed at the beginning of secondary education (at that moment they were in sixth and seventh grade) can predict performance on the multiple-text reading task two years later. Concretely, we explored longitudinally if three fundamental reading skills (word recognition, reading comprehension and rhetorical competence) were able to predict two years before the student's performance in the multiple text task taking into account the same measures used for Study 1.