Building Inference Skills with Web-based Scaffolding Tools

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Declaration

I hereby declare that my research report entitled:

Building Inference Skills with Web-based Scaffolding Tools

- is the result of my own work and includes nothing which is the outcome of work done in collaboration except as declared and specified in the text;
- is neither substantially the same as nor contains substantial portions of any similar work submitted or that is being concurrently submitted for any degree or diploma or other qualification at the Universidad de La Sabana or any other university or similar institution except as declared and specified in the text;
- complies with the word limits and other requirements stipulated by the Research Subcommittee of the Department of Foreign Languages and Cultures;
- has been submitted by or on the required submission date.

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Abstract

This document is a registry of the use of web-based scaffolds to foster inference, improving reading comprehension. Reading is a crucial skill that depends on the active role of the reader to construct meaning. Developing this active skill supports lifelong learning. Strategies have been implemented to improve learners' capacity to comprehend by inference. This paper proposes that web-based scaffolds can increase learners' inference skills and performance. Previous research has shown how inference has a positive effect on reading comprehension, presenting how to foster the development of these strategies and their impact on readers. However, studies lack details on the technological tools used to promote reading strategies in learners. This mixed research study used mock tests to explore how inferencing strategies affect learners' comprehension in reading sections of a standardized test. The study gathered information about learners' insight regarding the web scaffolds used to promote inference through interviews and the evidence gathered through Google Classroom, and then analyzed following the grounded theory methodology. The data suggest embedded tools to support inference allowed an eased approach to reading for struggling readers, which was reflected in learners' performance in the reading section of the exit test. Fostering lexical inference is viable through web-based scaffolds. The scaffolds selected should be implemented, taking into account available resources and proper integration to the syllabus.

Keywords: English as a foreign language, web-based scaffolds; Reading Comprehension; Inference, Standardized tests.

Resumen

Este documento es un registro del uso de andamios basados en la web para fomentar la inferencia, mejorando la comprensión de lectura. La lectura es una habilidad crucial que depende del papel activo del lector para construir el significado. El desarrollo de esta habilidad activa apoya el aprendizaje permanente. Se han implementado estrategias para mejorar la capacidad de comprensión de los alumnos por inferencia. Este documento propone que los andamios basados en la web pueden aumentar las habilidades de inferencia y el rendimiento de los alumnos. Investigaciones anteriores han demostrado cómo la inferencia tiene un efecto positivo en la comprensión lectora, presentando cómo fomentar el desarrollo de estas estrategias y su impacto en los lectores. Sin embargo, los estudios carecen de detalles sobre las herramientas tecnológicas utilizadas para promover estrategias de lectura en los alumnos. Este estudio de investigación mixta utilizó pruebas simuladas para explorar cómo las estrategias de inferencia afectan la comprensión de los alumnos en las secciones de lectura de una prueba estandarizada. El estudio recopiló información sobre la percepción de los alumnos sobre los andamios web utilizados para promover la inferencia a través de entrevistas y la evidencia reunida a través de Google Classroom, siguiendo la metodología de la teoría fundamentada. Los datos sugieren que las herramientas integradas para promover la inferencia permitieron un enfoque de lectura más fácil para los lectores con dificultades, que se reflejó en el rendimiento de los alumnos en la sección de lectura de la prueba de salida. Fomentar la inferencia léxica es viable a través de andamios basados en la web. Los andamios seleccionados deben implementarse teniendo en cuenta los recursos disponibles y la integración adecuada al programa de estudios.

Palabras claves: inglés como lengua extranjera, andamiaje en línea; comprensión de lectura; inferencia, pruebas estandarizadas.

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Chapter 1: Introduction

1.1 Introduction to the study

Contemporary education promotes active reading skills to increase comprehension and to support lifelong learning. However, there is a crucial element that is connected to reading effectively: comprehension. Reading comprehension goes beyond just recognizing a word or utterance; it involves integration and connection from what is read and the reality of the reader. At first, these connections can come from lexical sources or the reader's previous knowledge (Nation, 2008; Westwood, 2008). Trying to understand how reading comprehension develops is difficult due to its complexity, but research is needed for teachers to strengthen their students' reading ability. Students struggle to comprehend some texts, especially under pressure, for example, in evaluations. Poor reading comprehension is linked to low academic performance (Elwér et al., 2015), which can become an even more severe problem if it is not detected in time (Nation, 2008; Westwood, 2008). Here the role of standardized tests is crucial, as they can help to detect reading comprehension problems at any given stage. The study aims to address poor reading comprehension observed in a group of 7th-grade students in the Reading part of the Preliminary English Test (PET), which they had taken in 6th grade.

Standardized tests have centered on the discussion regarding the validity of test results such as the PET and their relation to learners' cognition and comprehension level (Bax, 2013). As Bax explains, test results can offer new insight into how students take these examinations and how to help them. At first glance, a viable approach to examinations would be to help students with their metacognitive strategies. However, metacognitive strategies take time to be learned and used (Ardasheva et al., 2019), so test-takers cannot rely on those strategies if time and

pressure are against them. In such circumstances, inference as a strategy is quicker, as it requires few steps and thus time than metacognitive strategies. For example, while identifying unknown vocabulary that could be key to answering specific types of question (Dressler et al., 2011)

Fostering inference is not an easy task, but if done correctly, it can help students improve their reading comprehension levels (Denton et al., 2017; McKoon & Ratcliff, 1992). It is necessary to conduct research that addresses poor reading comprehension levels through inference. The application of inference as a strategy can eventually help learners to meet their needs and the educational standards. In the bilingual school in which this study was carried out, students do not usually use notebooks or paper-based materials; instead, they spend a high percentage of their classes using laptops in a blended-learning environment. Inference can be fostered through web-based scaffolds (Lee & Calandra, 2004; Saye & Brush, 2001; Schnotz & Heiß, 2009). In this study, web-based scaffolds are tools chosen to help less advantaged students overcome certain linguistic or logistic needs during their tasks (Zheng, 2016). Such scaffolds have the flexibility and potential to help improve students' and teachers' performances in class and can be adapted for use in both learning activities and tests (Raes et al., 2012; Shin et al., 2017).

1.2 Rationale for the study

1.2.1 Rationale for the problem of the study

1.2.1.1 Needs analysis and problem statement

This project was conducted with a group of 40 seventh-grade students from a school located in the northern part of Bogotá, Colombia. The school follows the *Understanding by Design* approach, which favors backward design and modifications in terms of content, goals, and methods throughout the school year (Yurtseven & Altun, 2017). These methods still comply

with the requirements set by the Colombian Ministerio de Educación Nacional (MEN) by adapting the components established in the government's didactic guides into their school goals (Transfer, Understanding, Knowledge, and Skill goals) (Wiggins, 2005). The MEN has established that students from eighth and seventh grade should reach a CEFR proficiency level of B1.1 (Council of Europe, 2001). The school policy is that seventh-grade students should reach a B1 proficiency level. Once the student is about to graduate from school, they must take the International English Language Testing System (IELTS) exam. The school aims to have students reach a C1 CEFR level by the end of their studies in the institution.

To establish a basis for the present study, the first stage of a needs analysis explored which language skills students most needed to improve. Standardized tests, such as the PET or the IELTS, contain a variety of questions and content related to different fields, which can help identify student language needs (Alderson & Banerjee, 2002). Participants at the school took a mock exam, and the results show that the participants' oral production and listening skills were consistent with (or better than) the goals established by MEN and the school. However, there was considerable variation in participants' reading scores; the results revealed that they had difficulties with inferring, contrasting information, and following instructions (Baldonado, et al., 2015; Kendeou, et al., 2012).

After the first part of the needs analysis, the researcher held two semi-structured interviews with the groups and implemented a questionnaire (Appendix A) of their perceptions of language skills. The platform used in school, Google Classroom (Appendix Q) was mainly perceived as a space in which participants could turn in tasks and access shared files, but the tool may be underused. Difficulties connected to the mock reading test were also referenced by participants in the interviews and questionnaire results. For example, 12 students expressed that

they lacked confidence and struggled during the reading section of the test. Some specific difficulties mentioned were a lack of vocabulary, the complexity of the texts, connections between text and tasks, and time management. The participants' reading comprehension seemed especially weak in the true/false section of the reading portion of the exam, where performance depends heavily on students' inferencing skills (Cain & Oakhill, 1999). During the semi-structured interviews, the participants noted they needed to improve their reading comprehension level. Overall, based on the results of the needs analysis, it was decided that the present study would focus on the participants' problems with interpretive and lexical reading comprehension.

1.2.1.2 Justification of the problem's significance

Poor reading comprehension is not always identified in time; this difficulty can remain hidden and affect the academic success of poor learners with poor comprehension skills unexpectedly, as found by Tong (2011). Authors such as Tong or Dymock (2012) concurred that reading comprehension is a complex process that goes beyond just the coding and interpreting a set of symbols into meaning. Proper reading comprehension involves many levels of depth, which involve further connections between what is read and the learner's reality (Riffo et al., 2014). The lack of proper reading comprehension or decoding issues can lead learners to have difficulties in their academic success and pose a challenge for learners trying to certify a required proficiency level (Cain & Oakhill, 2006).

It is acknowledged there is a close relationship between decoding, vocabulary, and comprehension (Riffo et al., 2014). If any of these is lacking, it would seriously affect a reader's overall comprehension. In working with reading difficulties, it is important to focus on the type of reading comprehension difficulties and what reasons are behind these difficulties (Cain & Oakhill, 1999; Westwood, 2001). In the context of the present study, the participants needed to

improve their reading comprehension to achieve a C1 (CEFR) proficiency level. Even if the objective was set to be achieved by the time they were in their final year of school, tackling these difficulties as early as possible was vital to help students detect and overcome issues that were affecting their reading comprehension skills (Tong et al., 2011).

1.2.2 Rationale for the strategy selected to address the problem of the study

In a language, all skills are necessary to achieve proper communication; both input and output skills are important in the way that these help a person to view and change reality as it fits their needs. Interpretation while reading may vary from person to person, depending on the nature of the text. However, in standardized exams, interpretation as a flexible element is not taken into account *per se*, a test measures how effective the taker's reading skills are in terms of idea identification, argument relation, connection, and analysis (Bax, 2013; Castello, 2008).

For people with reading comprehension issues in standardized examinations, it is vital to strengthen their inferencing strategy. Inferencing connects the general information found in the text with the reader's previous knowledge. Inferences can be locally coherent within the text itself, or they can be reliant on quick and easily available information (McKoon & Ratcliff, 1992). One of the target school's tenets is to prepare learners to achieve a C1 (CEFR) proficiency level, and proper inferencing skills can help them to achieve this goal.

Reading skills are taken into account in the school's curriculum, mostly in language, social sciences, philosophy, and L2-English areas. Usually, schools like one where this study was carried out, based their bilingual teaching practice on Contend-Based instruction (CBI), this is expanded in Chapter 3. Each class can have resources with complex lexical requirements, which could present difficulties to a struggling reader, making reading strategies such as inferencing still pose a challenge for students, especially when under pressure (Cain & Oakhill,

1999; Castello, 2008). Reading is a cross-linguistic ability, which means that students' reading abilities should be taken into consideration in all classes in the curriculum and not just the ones mentioned before. School policies have spread out the responsibility of reading skills to the subjects which have direct contact with the language, such as social sciences, philosophy, Spanish, and English language classes. Policies are designed to foster reading skills, but teachers prioritize their subject content over interdisciplinary skills in practice (e.g., those connected to reading) due to lack of time and the pressure to complete their subject programs (Keedy & Simpson, 2001).

In the school where this study was carried out, students will take the IELTS by the eleventh grade, and they are expected to achieve a C1-level (CEFR) performance. Thus, it is vital to diagnose and address problems with reading comprehension skills before this point to allow enough time to analyze their skills properly. More importantly, they will need to improve their knowledge and use of appropriate reading strategies.

The present study focused on using web-based scaffolding to improve reading comprehension through inference. The web-based tools foster and promote access to prior knowledge, which helps participants understand contextual information and generate their explanations during problem-solving activities (Lee & Calandra, 2004). The scaffolding tools help students overcome subject difficulties and learn responsibility and independence (Meskill, 2005; J. Smit & Eerde, 2011).

The design of web-based scaffolding tools must consider whether the scaffold is intended to be hard or soft in the course design. Soft scaffolding tools are variable and shifting approaches that can be used quickly by teachers during the learning process, such as to clarify a task in a particular way (Gusrayani, 2014; Raes et al., 2012). Hard scaffolding tools are static and

planned, as, for example, the learning environment provided to students (Shin et al., 2017). The advancement of scaffolding facilitates students' independence over time, meaning these tools could be gradually removed depending or the learners' preference or performance (Lee & Calandra, 2004).

1.3 Research question(s) and objective(s)

The purpose of this study was to explore whether strengthening participants' inferencing skills through the use of web-based scaffolding tools could help them improve their reading comprehension to B1 level of proficiency (Council of Europe, 2001). Thus, the corresponding research question was: How does using web-based scaffolding tools supporting inference affect the reading comprehension skills of seventh-grade students with A2 (CEFR) proficiency in English?

1.4 Conclusion

Proper reading comprehension skills can have a marked effect on results from standardized tests, such as the IELTS exam (Bax, 2013). Helping students build their inferencing skills to understand, not only the text but also what they are required to do with that text can improve these results (Cain & Oakhill, 1999; Carlson et al., 2014). The researcher also determined that this approach could help the participants in the present study achieve a B1 proficiency level in English (Council of Europe, 2001), and eventually C1 performance as required by their school. Learning to use inferencing strategies would also help them further develop and support their learning skills for future academic success (Carlson et al., 2014; McKoon & Ratcliff, 1992).

This study explored how the use of web-based scaffolding tools, whether "hard" or "soft" as Chen (2016; Shin et al., 2017), classifies them could foster the development of inferencing

skills. As with any scaffolding, such tools need to be gradually removed so that students do not become entirely dependent on them (Lee & Calandra, 2004; Schnotz & Heiß, 2009; Shin et al., 2017; Zwiers, 2006).

Chapter 2 addresses the understandings of inferencing and reading comprehension adopted by the present study, as well as how these can affect each other. The state of the art shows the gap identified in the current literature reviewed.

Chapter 2: Literature Review

2.1 Introduction

The first chapter presented the rationale and motivations behind this research project: promoting inference as a strategy to improve seventh-grade students' reading comprehension performance in the corresponding test section. To do so, web-based scaffolds covered the lexical needs so that inference could be trained. Reading comprehension and inference are recurrent terms in language teaching, and clear definitions are necessary. The following chapter deals with the underlying concepts used in this research project: reading comprehension, inference, and web-based scaffolds, a tool that also fosters autonomy. Finally, it presents studies dealing with similar topics and their conclusions in the contexts of where they intervened. Moreover, the state of the art shows the gaps identified in the studies presented.

2.2 Theoretical framework

2.2.1 Reading Comprehension

For this study, reading comprehension is an ongoing cooperative construction of meaning between a reader and a text. A definition of reading comprehension needs to include a reader's cognitive, educational, and personal background (Kibui, 2012). Comprehension drives academic success as learners are exposed to texts which vary in length and difficulty (Gómez, 2017). The main agreement regarding the definition of this term is that reading comprehension is an acquired ability to understand the contents of a text in an intentional and interactive process (Kendeou et al., 2012; Logan, 2017; Snow, 2002). Students come across different documents in their lives, either for information or as leisure content; this input becomes part of their previous knowledge (Vygotsky & Mead, 1986). With background knowledge, reading comprehension is

a flexible and on-going “co-construction” between the reader and the text, and this construction reveals the different layers of meaning which a text can have (Fisher & Lapp, 2009; Snow, 2002; Woolley, 2011). Each element required to comprehend a text has a purpose, and reading comprehension is an ability that students must have.

The first element to consider in reading comprehension is the reader’s background knowledge. Background knowledge plays a role as an activator to relate and contrast the learners’ previous experience and the new information that comes from a text (Logan, 2017). Moreover, background knowledge is closely related to content schemata, which is the one that contains the previously known information to do specific processes like predictions (Bailey & Curtis, 2015). Another variable affecting learners’ background knowledge is their cognitive or specified reading difficulties. To develop these requires special assistance and differentiated educational approaches (Woolley, 2011).

The second element of reading comprehension is the text itself. Texts present a series of variables, such as vocabulary and the learners’ ability to recognize these words to convey meaning (Ribeiro, et al., 2016). Word recognition is an essential element for comprehension as a proper understanding of the terms in a text is key to a successful outcome in comprehension activities (Raudszus et al., 2018; Ribeiro et al., 2016). Moreover, a learner’s vocabulary background can reveal how their mother language influences their second language reading comprehension, as adequately understood vocabulary sets enrich learners’ conceptual network (Cummins,1987; Raudszus et al., 2018).

Finally, the third aspect of developing for accessing reading comprehension is finding texts that match the vocabulary used in the school’s curriculum. This is because any unknown sets of vocabulary could present strenuous limits on comprehension in a reader (Raudszus et al.,

2018; Ribeiro et al., 2016). Assessment towards reading comprehension should revise the participants' ability to identify, visualize, and connect the information with his background and the objective of the texts given (Cain & Oakhill, 2006; Logan, 2017). Students with poor reading comprehension and vocabulary gaps usually display a lack of connection between the contents in the text and the tasks assigned in a test (Elwér et al., 2015).

2.2.2 Inference

A variety of strategies have been implemented to help students improve their level of comprehension (Woolley, 2011). Inferencing is one of the strategies promoted by researchers, as it enables learners to comprehend beyond the literal information present in a text even if they are short texts (Cain & Oakhill, 1999; Hall, 2016; Williams, 2014). The term inference can be defined as the strategy that connects missing or hidden information from a text (Carlson et al., 2014). Inferences are not evident within a text (McKoon & Ratcliff, 1992; Narvaez et al., 1999) but are generated from the interaction of the information from the text and the readers' background knowledge (Elleman, 2017; Williams, 2014). Inference can be useful in a variety of situations such as checking the messages between the lines of a text while reading (Carlson et al., 2014; Clinton et al., 2016) or aiding the learner to guess with accuracy the meaning of an essential word within a text (Hamada, 2009). Moreover, there are specific types of inferences, depending on the elements connected. For example, language uses lexical inferences. Lexical inferences are the ones that help readers convey the meaning of unknown or disconnected words or ideas within a text (McKoon & Ratcliff, 1992; Wesche & Paribakht, 2009)

McKoon and Ratcliff (1992) divided inferences into local and global. The first division, local inferences, establishes a connection between the text and the reader's short-term memory background. This encoding relies on the reader's recently obtained information from a source

(text), and it is considered to happen automatically while reading (McKoon & Ratcliff, 1992). On the other hand, global inferences are the ones able to connect separated pieces of texts, as these make connections between explicit parts of information and a network or chained texts (McKoon & Ratcliff, 1992). In addition to this, according to McKoon and Ratcliff (1992), global inferences do not necessarily happen automatically but can occur if they are part of a process to accomplish a goal. These local and global inferences link previous knowledge and text in different manners, and both aid comprehension in a different way.

For this study, the lexical inference was selected as a strategy to help learners to reveal meaning through the interaction of their previous knowledge and the texts, though such inferencing may occur automatically or not (Cain & Oakhill, 1999; Hall, 2016; McKoon & Ratcliff, 1992). As a strategy, inference shows positive outcomes if it is taught explicitly (Reed & Lynn, 2016). Thus, inference is considered as a strategy that helps readers convey meaning and generate connections between gaps of information. In the case of lexical inferences, the struggle would be with unknown words and connecting the sense that these words suggest. The tools selected to support the teaching of inference were embedded scaffolds in learners' resources, examinations, and mock exams assigned through the platform Google classroom (Appendix Q). These were eventually removed to see if learners integrated the lexical inference strategy properly.

2.2.3 Web-based scaffolds

Strategies such as inference require modeling to be appropriately learned and used (van de Pol et al., 2010). As it was mentioned above, inferences connect prior knowledge and new information, which can be facilitated with scaffolding. Traditionally scaffolding is the group of techniques to promote further understanding and autonomy in learners (Azevedo & Hadwin,

2005; Zwiers, 2006). Scaffolds can foster connections between prior knowledge and new input, which helps participants understand contextual information and generate their explanations during problem-solving activities (Lee & Calandra, 2004). Teachers can use one of two types of scaffolds, depending on their pedagogical needs. Moreover, scaffolds are not necessarily permanent, and they can usually be removed through a process called "fading" (Dabbagh & Kitsantas, 2005; Zheng, 2016). However, fading must occur gradually and in an explicit manner (Dabbagh & Kitsantas, 2005; Meskill, 2005).

For the present study, scaffolds are tools that enable students to overcome learning challenges. A scaffold can have two possible categories, hard or soft. First, soft scaffolding tools are variable and shifting items that can be used quickly by teachers during the learning process, such as to clarify a task in a particular way (Gusrayani, 2014; Raes et al., 2012). These soft scaffolds are bound to situational moments during the learning process (Brush & Saye, 2002). On the other hand, hard scaffolding tools are static and planned based on the expected needs from learners, as, for example, time management recommendations per exercise or designing an outline for an essay (Brush & Saye, 2002; Shin et al., 2017). Using scaffolds suggest an increase in students' understanding and enhancement in their independence (Brush & Saye, 2002; Smit, van de Grift, de Bot, & Jansen, 2017). They should be temporary, and the learners should decide the frequency of their use and the option of modifying them.

Technological advancements have allowed scaffolds to evolve and set new stages for interaction between teachers and learners (Dabbagh & Kitsantas, 2005). For this study, both hard and soft web-based scaffolds were implemented to students through the platform to enhance their skills and strategies (Brush & Saye, 2002; Gusrayani, 2014; Shin et al., 2017). In this study, the scaffolds were integrated with the Google Classroom platform (Appendix R). Web-based

scaffolding tools such as dictionaries were embedded in the platform and the browser. **¡Error! No se encuentra el origen de la referencia.**). These embedded dictionaries were first included as a suggestion in Google Classroom and later added to their browsers to be used in websites and study materials. Other web-based scaffolds could be used depending on the class resources. For example, collaborative text annotation or text simplifiers, such as Rewordify, could be used with mock tests and editable documents.

2.3 State of the art

2.3.1 Previous research on reading comprehension

Reading comprehension is a significant area in education and, more specifically, in language learning research (Butler et al., 2010). However, there are studies which aim to approach reading comprehension from aspects other than web scaffolding. For instance, Vasquez (1990) focused more on pedagogical outcomes to reading comprehension (specifically on how reading comprehension affects academic success). Hall (2016) focused more on a psychological perspective on how to aid learners with difficulties in reading comprehension. Williams (2014) examined how government plans and policies have affected the assessment of reading as a skill. Although several studies have addressed specific issues regarding reading comprehension in language learning, most agree on the importance of developing this area as it influences and empowers learners' academic success. Such is the case of Raudszus (2018) and the lexical issues behind reading comprehension, Kibui (2012) with African learners towards state exams, and Phillips (1989) on how to find a valid assessment for reading comprehension (Butler et al., 2010; Tong et al., 2011).

As reading comprehension is a broad term of study, issues which deal with reading comprehension that range from learning difficulties (Carlson et al., 2014; Nation, 2004; Tong et

al., 2011; Woolley, 2011) to implementation of reading strategies (Ávila & Vélez, 2016; Hamada, 2009; Narvaez et al., 1999; Snow, 2002) have been examined. Some studies (Bax, 2013; Broom & Jewson, 2013; Montelongo, 2011; Nation, 2008; Poonpon, 2010) focus on the complexity of the text in terms of genre or vocabulary and their influences on eventual comprehension. However, the present study addressed the question of how reading comprehension can be fostered through web-based scaffolds towards a satisfactory performance in the PET (Preliminary English Test).

While reviewing the studies presented here, two standard cores have been identified to classify the literature found regarding reading comprehension. The first set of articles were the ones focused on reading comprehension and learners with learning difficulties. For example, Woolley connects reading comprehension and cognitive structures (Woolley, 2011). On the other hand, studies such as Westwood (2001) and Nation (2008) propose the importance of teacher awareness towards poor reading comprehension and the possible identifiable causes which could be addressed by teachers during the learning process.

The second area of research revolved around the reading strategies applied and their effect on reading comprehension. Nation (2008) claimed the importance of word and meaning recognition, and this idea is shared by Tong (2011) and Ávila and Vélez (2016). Tong focused on how morphological awareness can aid a learner in scaffolding weaknesses connected to comprehension at a lexical level. On the other hand, Ávila and Vélez (2016) brought the issue of poor reading comprehension in Colombian public school seventh-grade students through self-directed strategies. Research has shown how reading comprehension strategies help students overcome a variety of topics (Ávila & Vélez, 2016; Fisher & Lapp, 2009; Tong et al., 2011). However, once students engage standardized tests, issues such as text complexity and time limits

tend to affect learners' performance (Poonpon, 2010) because these strategies follow a step-by-step guide to understanding long texts (Ávila & Vélez, 2016).

Finally, the third trend, which conveys several recent studies on how online tools and designs can foster reading comprehension. The tendency to use online activities such as WebQuest or Cybertasks to foster better reading comprehension is not new, and it has been progressively integrated into EFL classrooms (Girón-García, 2015). Similarly, Chen (2015) used WebQuests and web-based tasks to explore which reading strategies were used by the target population. Chen's group tended to use global reading strategies, mainly the ones which involved the use of graphic organizers or tables. Blanco and Parra (Blanco & Parra, 2016) explored students' and parents' perceptions regarding computer and online-based reading comprehension tasks, which received a positive view and a sense of improvement. Additionally, Blanco and Parra emphasized the significance of pre-teaching vocabulary.

However, the closest use of tools to improve reading comprehension through a Chrome app came from the healthcare field, which aids patients struggling to understand the medical terms and data provided by their doctors (Thapa-Chhetry & Keck, 2019). Thapa and Keck's study presented the lexical challenge their patients had; the scaffold chosen allowed the readers to understand texts in an eased manner. However, their paper was focused on medicine and health-care implications of the participants and did not include the use of reading comprehension strategies. The central gap of past explorations is the role of lexical inference to address reading comprehension as an element evaluated in standardized tests. The emphasis of the present study focused on the effect of lexical inference as a strategy to aid learners during standardized test reading sections, such as those posed in standardized tests through online tools.

2.3.2 Previous research on inference

Adequate reading comprehension has required proper fostering of a variety of strategies to help learners improve their comprehension of a text (Ávila & Vélez, 2016), and inference is one of them. Unlike studies on inference as an ability to assess (Phillips, 1989), the studies reviewed revolve around the use of inferences as a strategy to improve the comprehension of a text. Generally, inference making has been researched in the psychology field, such as the study led by McKoon and Ratcliff (1992), who studied the effect of global and local inferences through a series of empirical tests. Their research also pointed out that local inferences can be rapid and accurate if the purpose and objectives of the text presented are clear to the participants.

Cain and Oakhill (1999) also dealt with the issues surrounding inference, such as which factors connected to reading comprehension contributed to inaccurate inferences. Moreover, there have been studies on the proper procedures for assessing inference, centering the discussion on inferences as a personal tool. As investigations continued, researchers such as Kopitski (2007) centered the debate on inference as a strategy to be used to improve comprehension levels. Hall (2016) studies the role of inferences in reading comprehension of elementary to middle-school participants showing how inferences benefit learners, even those with serious difficulties in reading comprehension.

Scholars' interpretations of the specific ways to implement are also pervasive in the literature on inference research. While some studies focused on particular aspects of inference on improving reading comprehension, Hall's (2016) did not distinguish a specific type of inference. On the other hand, Reed and Lynn (2016) carried out a study which focused on text-dependent inferences (Local inferences). In that study, middle-grade students with learning disabilities were trained in inferences strategies. The study had a positive outcome, showing how local inferences

improved reading comprehension in children with disabilities. In addition to this, van der Schoot (2016) presented how inferences complement the need of readers to achieve coherence in the comprehension of a text through textual clues. Research on inference as a means to improve reading has usually had positive findings concluding that it permits learners to imply and connect gaps of information (Clinton et al., 2016; Reed & Lynn, 2016; Zhou & He, 2018). Further research is needed in more specific classroom environments to understand the extent of its benefits.

In Colombia, studies such as that of Ortiz and Aldana (2017) focused on the use of reading strategies, including inference, to promote critical thinking and problem solving supported by technological and communication tools. These tools were presented generally as exercises. The study demonstrated how language proficiency also affected the quality of analysis and inference making in the participants. Casallas and Calderón (2016) had done similar research directed to understand scientific reports and articles. For the most part, researchers recommended inferences to improve reading comprehension and for preparing for standardized tests(Reed & Lynn, 2016), but Colombian studies tend to focus on the lack of resources and autonomy challenges presented. Significant to this research proposal, is that there is a gap between the importance of inference strategies and what tools are useful at fostering them for standardized test reading sections. The present study focused on how inferences, explicitly promoted by web-based scaffolds, can improve the participants' performance in a standardized reading section.

2.3.3 Previous research on web-based scaffolding

Authors such as Smit and Eerde (2011) and Chen and Law (2016) presented scaffolding as a vital strategy for helping struggling students in their learning process because it can drive better understanding, task modeling, lexical support, or task purpose reminder.

Scaffolding effectiveness in terms of form and suitability is often a matter of discussion (van de Pol et al., 2010). Yet, it has gained acknowledgment as a tool to foster a variety of elements in the classroom. Technically, a scaffold is like an ace guiding and giving recommendations to a novice (Vygotsky & Mead, 1986). These recommendations are usually beyond a novice's capacity, but they can grow students' abilities to master them (Wood & Middleton, 1975). This term is grounded in psychology research. For example, Wood (1975) studied how mothers and their children interacted and which attitudes helped *to model* children's abilities according to their needs. Studies, like the ones directed by Wood, were adopted and later adapted to other subjects with similar learning needs, such as math teaching or science (Zheng, 2016). Smit and Eerde (J. Smit & Eerde, 2011) added the role of research regarding scaffolds and their role in learner's lexical proficiency in mathematics, making scaffolding a beneficial tool to research for multiple fields.

In contemporary education, technology allows greater flexibility and offer of scaffolds. These web-based scaffolds have the same function as their predecessors. Lee and Calandra (2004) used embedded annotations as scaffolds with high school history class students. Then they compared their overall performance. This study displayed how embedded annotations as scaffolds had a positive outcome. However, Lee and Calandra warned scaffolds would be rendered ineffective if the tools are not appropriately modeled, or if they do not provide instructions. Dabbagh and Kitsantas (Dabbagh & Kitsantas, 2005) revealed similar outcomes, plus supporting the claim that web-based scaffolds fostered self-regulating habits towards assignment completion. However, different scaffolds supported different regulation processes (Dabbagh & Kitsantas, 2005). As mentioned before, Thapa-Chhetry and Keck (Thapa-Chhetry & Keck, 2019) used an extension in a browser to help their patients understand their medical

reports by supplying a useful tool to understand unknown vocabulary. Thapa-Chhetry and Keck's intervention ultimately is a form of scaffolding, but as it was carried out in the medical field, it does not explore major learning implications. However, patients felt confident and gave positive reviews on the tool as it helped them to understand their diagnosis. To be considered effective, a scaffold must have a clear objective and a use routine, regardless if it is a hard scaffold, or a soft scaffold (Dabbagh & Kitsantas, 2005).

This "routinization" can be fostered through the correct implementation of a common platform, such as Google Classroom. To be considered a platform, it must be a group of programs, applications, resources, and other technological aids working together to enable a purpose (Barakhtenko & Sokolov, 2019). Google Classroom is a basic yet good example of a platform accommodates learning and teaching needs of a variety of contexts because of its focus on teaching, flexible structure, and interactive functions. For instance, Kara (2019) favors the implementation of web-based scaffolds through a syllabus that takes advantage of the services offered by Google. However, Kara's study focused on the instructional part of a general program, and not in the development or support of specific skills. Studies require integration and coherence between the scaffolds selected, the means to use them, and the syllabus objectives to have a successful outcome. As a contrast, scaffolding could occur either way as a learners' response. For instance, Andrei (2019) explored how adolescent students used their smartphones, and school-provided computers, as a means of scaffolding. Andrei's study shows that learners have a broad selection of supporting tools. Still, if the methodology or nature of the scaffold is unclear, there will be a tendency to use technology as a means of leisure instead of a tool for educational development. Web tools can be effective in scaffolding struggling and vantage

learners alike (Langer, 2010). However, positive outcomes were reported in studies that integrated the scaffolds selected to their syllabus.

Studies on scaffolding and technology have been carried out in Colombia, such as the one by Ortiz and Aldana (2017). This investigation concluded that critical thinking skills through the use of technology and communication tools were beneficial for learners. The study highlighted the high level of engagement some of the participants showed during the intervention. Still, Ortiz and Aldana emphasized the limitations of technology in public education settings in terms of resources, such as devices and Internet access. In contrast, studies with more access to resources, like the one made by Muñoz and Guayacán (2018), used the platform Moodle to provide an adequate learning environment to help a group of tenth graders to learn effective strategies to improve their reading comprehension and complement their vocabulary. Once resources are accessible, studies should be performed to provide additional conclusions.

This research paper concentrates on the primary gap identified after reviewing the literature on web-based scaffolding on reading comprehension--the use of web-based scaffolds without resource concerns. The conclusions were drawn by analyzing the selected scaffolds that were guiding recommendations. The scaffolds were selected and merged within the class' objectives and methods and considered a step to aid learners' inference strategy as they read to empower their performance in the reading section of standardized tests, in this case, the PET.

2.3.4 Justification of research question/objectives

After analyzing previous research, this study can complement the field of reading education in two unique ways. First, how a reading strategy based on inference (and more specifically, lexical inference) can improve a test-takers performance in the reading section of a standardized test, such as the PET (Hall, 2016; Reed & Lynn, 2016). The studies presented in

section 2.3.3 proposed that inference skills positively improved learners' overall comprehension of a text by tapping into their background knowledge and the new information presented in class and by generating inferences that aid the interpretation of assigned texts. However, the texts' purpose and conclusions did not focus on inference as a performance enhancer for standardized reading tests (Alderson & Banerjee, 2002; Chan et al., 2015; Hall, 2016). Therefore, it is relevant to study the effect of the inference strategy on a standardized test, such as the PET or the IELTS. Additionally, this study aims to register the use of embedded web-based scaffolds to foster lexical inference without the concern of resource availability (Ávila & Vélez, 2016; C. Chen & Law, 2016; Harris, 2015). This paper proposes that if the intervention is active, it can improve the integration of web-based scaffolds aimed to train reading strategies, such as lexical inference in standardized tests.

2.4 Conclusion

The previous research analyzed acknowledged the relevance of inference as a strategy to improve poor reading comprehension with comprehension, indicating academic success. The studies on reading comprehension showed that struggling learners need tools and strategies to scaffold their comprehension levels (Alderson & Banerjee, 2002; Chan et al., 2015; Hall, 2016). Although inference has been reported to help different groups of learners improve their comprehension levels, the effect of inference on boosting learners' performance in the reading section of standardized tests has not been thoroughly explored (Hall, 2016; Reed & Lynn, 2016). The present study examined the reach of lexical inference in the reading section of standardized tests. Additionally, the web-based scaffolds implemented are explained explicitly. This paper provides an example of how to implement them in a platform, such as Google Classroom. Its

introduction of web tools on inference acquisition makes an impact on the field of educational research and the use of technology in the classroom.

Chapter 3 introduces the group of seventh-grade students who participated in this mixed-type study, including their context and background. In this section, the context is expanded, including the particular curriculum and strategies of the target school. The chapter includes an explanation of the mixed methodology behind this study, plus the selection of the instruments used, such as interviews, surveys, field notes, and entry test data used to validate the present study.

Chapter 3: Research Design

3.1 Introduction

The literature review (Chapter 2) explored how studies have acknowledged the role of inference in the improvement of reading comprehension but have not established the effect of this tool on standardized test performance. Consequently, this study explored how inference, lexical inference specifically, as a strategy aids learners making quick connections (Elleman, 2017; Hall, 2016), and then measure their performance on the reading section of a standardized test, the PET. Additionally, it explored how inference, as a strategy, could be fostered through web-based scaffolds, which have been used previously to encourage better comprehension levels (Gómez, 2017) with no reference to their presentation or integration and no student insight regarding scaffolds as a tool. Therefore, it was essential to consider the context and the participants of this study to make the appropriate selection of instruments to gather the necessary data (Burns, 1999). The instruments selected were questionnaires and interviews, which were used to collect the participants' insights, comments, and feelings during the development of the research project. The standardized reading mock tests were used to gather quantitative information on students' reading comprehension proficiency before and after the implementation of the strategy. The research will conclude that the application of inference through web-based scaffolding tools increases success in comprension sections of standardized tests

3.2 Context

The study was carried out in a private school located in the northern part of Bogotá, Colombia. It is considered a bilingual school, and it strictly follows qualitative evaluation processes. The school's immersion program has worked with content-based instruction (CBI). CBI is used to plan lessons by focusing on a subject or topic using the target language. Thus,

learning the target language more naturally than with a form-focused approach (Stryker & Leaver, 1997). CBI was chosen due to a shared nature with the Understanding by Design framework—as they are holistic and global (Because of the intricate connections made between knowledge, learning needs, and performance). These characteristics merge well with the school's qualitative evaluation policy (Leaver & Stryker, 1997; Stryker & Leaver, 1997). The UBD framework relies on backward design and program changes as we teach if necessary and makes planning revolve around big ideas (the learning goals that can cover other subordinate topics, skills, understandings, and comprehensions), which leads to specific knowledge (Wiggins, 2005; Yurtseven & Altun, 2017). While focusing on the big picture first, content-based instruction (CBI) has proven to be beneficial to the school's main framework (UBD). Another element that was adopted while planning was the 4Cs for developing 21st-century skills—creativity, collaboration, critical thinking, and communication—which aim to prepare the students' integration into more complex world scenarios (National Education Association, 2014). Understanding by Design and educating for 21st-century skills are merged in the institution and are the academic basis of the school.

3.2.1 Type of study

The instruments gathered information from qualitative and quantitative nature, making this study fall into a mixed type. A combined approach to research is taken when there are sets of data with qualitative and quantitative character (Ponce, 2015). Moreover, the phenomena surrounding education and language teaching require an approach which can cover and gather from different aspects, but it also needs the procedure to be flexible enough to adapt to liquid and changing educational contexts that can vary throughout the implementation (Nunan, 1992; Ponce, 2015). Consequently, the qualitative data focuses on students' insight regarding their

performance during the reading comprehension tests, the embedded tools used in the platform, and the reflection of the use of inferences in standardized tests whereas quantitative data will gather the scores in the entry, middle, and exit tests during this study. Afterward, these scores were contrasted to determine the effectiveness of the strategy and the tool. A mixed approach to research organizes the information, but data analysis creates a dialogue between quantitative and qualitative data sets (Gorard, 2012).

Research grounded in mixed methods provides groundbreaking conclusions about the whole approach to education. This methodology needs constant support and cross-referencing of qualitative and quantitative data to reveal phenomena in an interpretive and numerical manner (Gorard, 2012). The dialogue generated between data sets aims to use both data sets as a mechanism to validate each other. The analysis eventually affect the direction the study takes, which is a characteristic shared with action research approaches (Nunan, 1992; Smeby, 2012)

3.2.2 Context and participants

This study was conducted in a K-12 school located in the northern part of Bogotá, Colombia. The school was founded in 1988, on the premise of providing innovative education, focused on an alternative educational approach for its students. It promotes critical thinking, maintaining a global focus, and fostering mainly Christian-Catholic values and beliefs. They have strict policies regarding social behavior and academic performance, but the target school welcomes innovative practices and research they can integrate into future plans. Currently, the school has about 800 students from preschool to eleventh grade. Most learners come from privileged families with a high socioeconomic status, where learners have many opportunities to interact with a foreign language, commonly English. Students are heterogeneous in terms of learning styles and aptitudes. Finally, the school is divided into four sections, entry education

(first stage of education for 4-year-old and 5-year-old students), primary education (first to fourth grade), middle school (fifth to eighth grade), and high school (ninth to eleventh grade).

The bilingual program takes these students to a B2/C1 level in English, according to the Common European Framework (Council of Europe, 2001). The participants of this study are two groups of seventh-grade students (21 male and 19 female) who have an average B1 proficiency level according to the Common European Framework (Council of Europe, 2001). The participants' ages range from 13 to 14 years old. Additionally, most of the students have been in school during all their educational process. There are only two students who integrated with the group and are adopting the school's philosophy. As was mentioned in Chapter 1 of the present study, the needs analysis revealed that students struggled with parts of the reading section. These were later referred to in the participants' comments after the PET mock exam (**¡Error! No se encuentra el origen de la referencia.**). Consequently, students are aware of the expected proficiency level they will need in four years when they face the standardized exam to graduate. Thus, they are interested in improving their reading comprehension skills, added by the curiosity about how the tool can help them to achieve this through the platform.

In addition to struggling with proficiency on standardized tests, students face a set of affective needs. Seventh-grade is a transition grade where students are expected to be more independent, autonomous, and active in their learning. There are recurring comments connected to their academic performance and feelings towards the educational requirements of middle school. They express their insight on language demands and their effectiveness and expectations as learners. Another set of comments are connected to the effectiveness of the platform Google Classroom (Appendix Q) and its role during this school year. The results reveal that the platform has served as a space to meet their assignments and a way not to waste paper. On a final note,

students' names were modified and given names at random to ensure no private information was revealed in the document, some of these names were coded for quick labeling.

Finally, cognitive needs identified in the needs analysis centers on boosting learners' comprehension skills to identify pieces of information and infer connections between the text, the exercises, and their context (Kendeou et al., 2012). These are connected to Bloom's (1964) taxonomy, which concludes that comprehension requires participants to establish connections and respond to stimuli, such as a text.

3.2.3 Researcher's role

For this investigation, the researcher taught and participated in the observations; thus, the researcher was an active teacher-researcher. Integrating research into daily teacher practice is not a new movement, but it still requires maintaining a reflective practice routine to improve instruction. This teacher-researcher model should be encouraged (Hammersley, 1993). This role enables the teacher to become an observer who also can modify practice, approaches, resources, and criteria as the study is ongoing. Thus, it allows the teacher-researcher to observe and interact with the participants so that the information retrieved from their insights and perceived results can be taken into account for modifications and improvements over time (McNiff, 2013).

3.2.4 Ethical considerations

Research studies require delicate and professional management of the participants' data to ensure participants' trust. Therefore, the participants are aware of their active role in producing necessary data through their insights and results (Banegas, 2015; Blaxter et al., 2010; McNiff, 2013; Zeni, 2006). Consequently, the consent letters (Appendix B) requested permission and gave information to all parties involved, including the school board, the participants, and their parents. The content explained the purpose of this study, the type of information required from

the participants, the risks (if any), and the benefit from the conclusion of this study. As argued by Banegas (2015), being explicit on the information required to complete the study, emphasizing the benefits of the outcome, and receiving explicit consent from those involved in the study are ways to ensure the protection of the participants and their information.

After explaining the consent process, the first consent letter was directed to the school's principal **¡Error! No se encuentra el origen de la referencia.**), who authorized the delivery of the consent letters to students and parents and the further implementation of the study afterward. Once proper authorization was given, students were presented with their consent letters, which had a student side and a parent side. These letters stated that students were assigned codenames, which differ from their names, to ensure confidentiality (Check et al., 2014; Zeni, 2006). Once informed consent from the participants was obtained, the implementation of the data gathering instruments started.

3.3 Data collection instruments

The selected instruments are intended to gather information about learners' insights, feelings, and opinions around the tools implemented and the students' performance in the reading section of a standardized test. Therefore, questionnaires and interviews focused on gathering the participants' insights, comments, and feelings during the development of the research project. The quantitative data comes from the standardized reading mock tests, based on the reading section of the PET. This test gathered information on students' reading comprehension proficiency before and after the implementation of the strategy proposed.

3.3.1 Descriptions and justifications

3.3.1.1 Questionnaires

Questionnaires were one of the instruments applied in the classroom. These questionnaires are an alternative of data collection, unlike interviews, use predetermined and fixed questions in written form for all participants. Questionnaires must be written in a level appropriate language (Kothari et al., 2014). If the participants are beginners, and the questionnaires were presented in a long and complicated style, the expected information from this instrument would lack validity and reliability (Burns, 1999). If administered correctly, questionnaires can give a basic understanding of the items the research focuses on (Burns, 1999; Kothari et al., 2014). The questionnaire registered the participants' insight regarding the use of the platform Google Classroom in their classes, and their perspective towards standardized tests, such as the PET. The data collection was done collectively, and the questionnaire was implemented through Google forms, which is a convenient and organized approach to gather this information.

3.3.1.2 Semi-structured interviews with focus groups

Interviews are the register of a face-to-face interaction, which requires the participants to talk about the data needed to complement the data in a research process (Burns, 1999). This instrument is usually used for descriptive studies, such as case studies, ethnography, or action research types of research, and requires a transcript for a more straightforward sifting process (Burns, 1999). The main objective of these interviews is to validate some of the answers provided through the questionnaire regarding students' feelings and insight into the platform used and standardized tests. However, there is limited time available for these activities in the school schedule.

The interviews were directed in a semi-structured approach with the participants as a focus group. This was done to lower the impact of time available for the interviews. The semi-structured method for meetings was selected because the questions were logically organized. Still, depending on the participants' answers, the flexibility of this structure would allow further exploration of particular insights or feelings, similar to a class discussion (Kothari et al., 2014). On the other hand, the focus group was used as all participants have their experience to be shared. Still, the interview was held as class discussions where researchers and participants interact with one another (Varga-Atkins et al., 2017). Thus, having semi-structured interviews with focus groups allowed information gathering from different participants, which minimized time disruptions. This combination of structure and flexibility provides a comfortable environment for participants. It will enable them to inquire about their opinion, insights, and expectations regarding the use of the platform and how this study could help them improve their reading skills.

3.3.1.3 Standardized reading test

Standardized tests are used in education to determine the effectiveness of a program and the proficiency level of a test-taker in a given area (Alderson & Banerjee, 2002; Friedman, 1984). Such is the objective of the PET or the IELTS, which participants will undertake once they are in 11th grade. The tests used came from the Cambridge practice test series (ESOL, 2003) provided by the school and the online sample offered at Cambridge's website. Testing can be a useful instrument in research connected to end performance and reading comprehension (Hall, 2016). Students had a first PET mock test, which would determine the entry-level of the participants before the intervention. Once the intervention and application of the web-based scaffolds stages

finished, students faced an exit test. These results were contrasted and confirmed the effectiveness of the strategy proposed in this study for the reading section of the PET.

3.3.1.4 Researcher journal

A journal is a useful and time-flexible instrument to keep track of the activities, events, feelings, thoughts, and observations done by the researcher while directing the study (Burns, 1999; Wiegerová & Lampertová, 2013). However, it requires the researcher to be objective, organized, and focused on the elements to register, as the entries may vary in structure and length (Wiegerová & Lampertová, 2013). The entries described, from the teacher-researcher perspective, how students fare with the strategy and the tools, describing their engagement, their inquiries, comments, and thoughts to be later contrasted with the data gathered through the questionnaires and interviews. Regarding its form, the journal was created digitally, with a section used to describe the class and events objectively and a side section that holds thoughts regarding those events (Wiegerová & Lampertová, 2013).

3.3.1.5 Rubrics

Rubrics are a focused way to provide feedback on a series of criteria to learners (Chan et al., 2015; Khalid et al., 2014; Wiggins, 2005). These formats can contain information that holds the descriptors of different outcomes in an evaluation process. Moreover, this information can be useful in further formative assessment moments (Chan et al., 2015; Khalid et al., 2014). Therefore, while teaching English as a subject with the participants, some criteria aimed to guide students in their level of inference, proficiency using the web-based scaffolds, and reading comprehension in general. Finally, the evaluation processes in the institution are conducted by rubrics, thus making this instrument non-invasive. This evaluation method serves as both process evidence and research instrument.

3.3.2 Validation and piloting

To ensure the validity and reliability of the instruments in a study, it is recommended to have a pre-pilot stage where adjustments can be identified and made before actual implementation (Blaxter et al., 2010; Nunan, 1992). The research instruments were pre-piloted with two teachers who are part of the middle school team at the school. Teacher 1 has been a teacher at the school for five years and holds a C1 certification. Teacher 2 is the coordinator of the English area at school; any evaluation or material to be used must be reviewed by them. After submission, adjustments, and changes were implemented in a section of the questionnaire, changing the question order in the semi-structured interview. Additionally, to determine the time required for implementation, the instruments were applied to a group of students with similar characteristics to the participants in this study. The piloting concluded the extension of the questionnaire and interviews did not cause fatigue on the participants, and the lexical complexity was well-adjusted to the participants' level. The recommendations received were mostly cosmetic and were added and edited in the Google Forms interface used to carry out the questionnaire. It is essential to pilot instruments prior to their implementation to ensure valid, reliable, and useful data (Blaxter et al., 2010; Burns, 1999; Kothari et al., 2014).

3.4 Conclusion

It is crucial to consider the participants, their needs, and their context to appropriately choose the instruments and the type of study which best suits the project to find a reliable and valid answer to the research question in this paper (Blaxter et al., 2010; Mason, 2010). Chapter 3 justified the need of using a mixed approach to research, due to the nature of the data sets, the instruments used and the information gathered, and the plan and order required to direct a study

properly. Thus, an organized plan allowed having a solid base where implementation and instruments could be applied without interrupting or changing the lessons in the study program.

Chapter 4: Pedagogical Intervention and Implementation

4.1 Introduction

Chapter 3 explained how this mixed-typed study implemented a variety of instruments to gather qualitative and quantitative data. Qualitative instruments, such as interviews and open-questions in the questionnaires, intended to collect learners' thoughts and insight (Smeby, 2012; Zacharias, 2012) regarding inference as a reading comprehension strategy and how web-based scaffolds have allowed them to activate it during reading comprehension exercises. Otherwise, the entry and exit tests gathered quantitative data on their performance before and after the intervention. This integration of data with different methods made this study become a mixed-type study (Ponce, 2015; Zohrabi, 2013). This study intended to merge the research elements into the daily classes, making disruption with the school's program minimal.

Additionally, the school where this study was conducted required the implementation to follow its framework and approaches, requiring a combination of the school's vision with that of the researcher. In the following chapter, the principles regarding the school's and the researcher's perceptions of learning, language, and curriculum are addressed. Additionally, the theory behind the lesson plans and the overall intervention is also described.

4.2 Visions of language, learning, and curriculum

4.2.1 Vision of language

Language is a complex, varied, and elusive term that changes depending on the specificity of the area studying it (Carranza, 2017; Tudor, 2001). Language is a social construction that grows through experience, exposure, interaction, and transference among people, communities, and cultures (Lamb et al., 2011; Vygotsky et al., 1962; Vygotsky & Mead,

1986). This construction leads to further expressions which feed the experience and exposure cycle further (Tudor, 2001). This interaction has different channels, which have become more complicated thanks to increased access to technology (Buckingham, 2007; Villanueva et al., 2010). One of these channels of interaction is reading. The definition of reading comprehension was addressed in Chapter 2. The term evolved from its decoding focused definition (Just & Carpenter, 1980; Sarroub & Pearson, 1998), to an interactive construction between the reader's background and the text (Ribeiro et al., 2016; Sönmez & Sulak, 2018; Strong et al., 2018). This study considers reading comprehension as a joined construction of meaning between a reader and an author through the interpretation of a text. An effective co-construction can benefit the growth of language in learners, complementing, and enhancing their academic and cultural skills. Therefore, working on reading comprehension is crucial to potentiate the amount of exposure and experience they can access to a foreign language.

4.2.2 Vision of learning

Learning can be a gathering, or dividing, the point between teachers and institutions. Learning, like language, has an enriching trajectory in its definition. At the target school, education is envisioned through three scopes: the one given by the Understanding by Design framework, the one proposed by the 21st Century Skills Framework (Battelle for Kids, 2015), and the one the English area program uses through project-based instruction. This sophisticated combination proposes learning as a critical need posed by the new century as global citizens. This universality is the central tenet for the 21st-century skills framework (National Education Association, 2014). Additionally, to accurately provide a learning environment according to project-based instruction methods, there should be an engaging situation in which learners can practice and use what they have learned while learning new skills or information along the way

(Richard-Amato, 1988). Finally, learning is demonstrated once the student owns the knowledge, skills, and understanding and finds its application in contexts similar to or beyond the ones presented in the classroom (Wiggins, 2005). This broadening of understanding is considered the transference in the Understanding by Design framework. These three visions of learning are taken into account during curriculum building and lesson planning at the target school. Still, the dominant one is the one proposed by Wiggins (Wiggins, 2005) in the UBD framework, where learning happens when learners transfer knowledge to an application through their performance.

4.2.3 Vision of curriculum

As with the vision of learning, the curriculum at the target school is based on the interaction of the Understanding by Design framework (Wiggins, 2005), Project-based instruction (Richard-Amato, 1988), and the 21st Century skills framework (Battelle for Kids, 2015). The interaction of these three elements provides the required planning, guidance, and assessment tools used in the institution. The curriculum intends to give learners the knowledge and skills needed by our current society, such as digital literacy, academic skills, and flexible mindsets. The elements taught in the school should and can apply to a variety of external contexts after finishing school (Keser & Özdamli, 2012; National Education Association, 2014; Wiggins, 2005). Under this light, the English curriculum intends to provide the language skills learners can use in everyday and academic contexts. Richard-Amato's (1988) insight on PBI offers the guidelines to plan the performance tasks, which simulate a real context problem or situation where learners use their previous and new knowledge to demonstrate their learning (Wiggins, 2005). The tasks, projects, and evidence require learners to use the target language consistently and their academic skills to demonstrate knowledge successfully. Additionally,

assessment is also carried out through tests, workshops, presentations, among other types of evidence that are registered in a qualitative evaluation process.

4.3 Instructional design

4.3.1 Lesson planning

During the intervention stage, only four classes were dedicated solely to model and train the use of the web-based scaffolds selected for this study. Learners were encouraged to use them at will and with no restriction as they developed their tasks and continued the school year. Thus, the modeling of the tools had to coincide with classes which had texts as a resource. If a learner found a scaffold useful for a skill other than reading comprehension, the exploration was encouraged as scaffolds (web-based too) are helpful if they take advantage of learners' exploration, self-regulation, and self-determination (Brush & Saye, 2002; Reynolds & D1, 2018; Wu, Weng, & She, 2016).

In general, the lessons directed to model the web-based tools took four moments. The first stage of the lesson created a situation where learners would feel a need to understand pieces of text. Identifying needs can lead learners to find tools or solutions to be scaffolded (Nunan, 1980; Read, 2008). Once this need was activated, the second stage was in-class presentations of their tools such as embedded dictionaries or browser search functions (Appendix D, Appendix P, Appendix Q) (Dictionarist.com, 2019; Goldman, 2014). During this stage, learners were expected to install the extensions to their internet browser if required. This stage involved troubleshooting with learners who needed guidance.

Once everyone had the tools at their disposal, we proceeded to the next step. These scaffolds supported inference making by covering lexical needs. Thus the reading

comprehension as a co-construction was easier. Inference was presented as a “connection” moment, where they felt they had a grasp of the meaning of the piece read and the objectives of the exercise. Lexical inference was mainly trained through guessing and context-based reading, which involved searching for clues within a text to make connections between reading meaning and reading purpose (Hassanzadeh et al., 2019; Quan, 2011). The scaffolds served as a clue indicator and as a confirmation tool of each student’s comprehension of a text. Once students used the scaffolds to unveil the clues, they were instructed to make the connections, and they could use their notes, a chart, or graphic organizer as an aid. The moment students expressed that they could make connections successfully; they were told they were starting to infer. After the first tool modeling sessions showed some inference examples from learners, students learned that inferences are the connections made in a reader-writer construction of meaning. The definition was simplified to the one presented in this study.

By scaffolding their lexical need with the applications mentioned before, students tended to use the tools sparingly depending on how immediate their need was. Then scaffolds for inference worked behind the logic of learning how to ride a bicycle with training wheels; the training wheels, or scaffolds, would be used and removed by the learners. Once tools and the strategy were modeled, testing became a way to monitor the process.

The third moment required learners to face a reading comprehension exercise, which was based on the Preliminary English Test (PET). During this exercise, students are allowed to use the tool modeled (and encouraged to use previous ones if possible). The third moment was generally an individual task, except the one intended for the Collaborative text annotation activity. After comparing answers and experiences, students would self-assess in the use and

usefulness of the tool during the task. Moreover, learners were encouraged to reflect and identify other classes that could take advantage of these tools, besides the English class.

4.3.2 Implementation

As mentioned in the lesson planning section, the intervention was merged with the plans already present in the English program. The implementation stage of this study took ten weeks in its execution, from October 17, 2018, to January 20, 2019. During this time, the required data collection instruments, modeling stages, and data collection were carried out. The detailed implementation plan can be seen in detail in Appendix C. During the first week of implementation. The teacher-researcher asked a group of students with similar characteristics to test and pilot the data collection instruments to ensure the clearness and usefulness for this study. The entry reading comprehension test was implemented as the last step of the first stage.

The modeling stage took place during weeks two and three. Week two consisted of implementing the required questionnaires to gather the first pieces on qualitative data. During these two weeks, four classes were adapted to transform their objective from a reading comprehension exercise into classes modeling the use of a specific web-based scaffold. As the tool modeling sessions showed some inference examples from learners, students were given a simplified definition of inference, which emphasized the connection between the text's meaning and purpose. Students' inference clues emerged and were used as examples of inference in action, and then reflected how scaffolds allowed them to identify these clues. Starting week 3, students who felt the need to use the web-based scaffolds could do so sparingly because they had the choice to gradually reduce or increase the use of a tool as the school year progressed.

After these four classes, students were encouraged to use these scaffolds at will. However, for critical observation of the use of these tools and the strategy presented in this

study, fifteen classes were identified to use reading comprehension as the skill to focus on during the session. During these classes, some focus groups were selected at random to gather their insight, feelings, and opinions regarding the tool and the strategy presented. These classes started from week four through week nine. Due to a planned school trip, and several school activities, the interview, exercise, and testing sessions were postponed. Finally, week 10 had the exit test. Once results were obtained, the learners and the teacher-researcher compared their entry and exit test, alongside the last focus group semi-structured interview.

4.4 Conclusion

Overall, Chapter 4 presented how this study merged the intervention stages with the English program at the institution. Thus, there was no significant disruption to the lesson plans in the program. Moreover, the tools presented to learners seemed relevant and useful to scaffold their reading comprehension proficiency. This allowed learners to use these tools beyond the requirements of this study, which indicates that scaffolding assists their language learning needs. Overall, Chapter 4 presented the implementation of inference as a strategy noting how and when the lessons intended to model and monitor the use of the web-based scaffolds took place. The following chapter describes how the data collection was processed and triangulated to answer the research question in this study.

Chapter 5: Results and Data Analysis

5.1 Introduction

After reviewing the reasoning, instructional design, and data collection tools behind this study, analysis of the results began. Contrasting, coding, and interpreting the data gathered resulted in categories that will be used to answer the central question of this mixed study: How does using web-based scaffolding tools supporting inference affect the reading comprehension skills of seventh-grade students with A2 (CEFR) proficiency in English? This chapter describes the coding process and the emergence of the categories of this study.

5.2 Data management procedures

Data came from different sources carrying specific insight into the study. Questionnaires and interviews registered the learners' experience during the intervention and implementation of the tools and the strategy. The teacher’s journal recorded quick events, descriptions, or insights during the application. The reading test accumulated learners’ performance changes before and after the intervention. Mixed methods can provide advantages by creating a broader picture of a specific phenomenon, even to the point of having an open view on different or conflicting pieces of data (Bazeley, 2008; Driscoll et al., 2007).

As the piloting of the activities was carried out, a PET reading section served as the basis to review the participants’ performance in this type of standardized test. As the strategy and the tools were introduced in class, there was a period of latency to allow learners to explore different tools at will. Near the end of the intervention, questionnaires and interviews were carried out to receive learners’ feedback on the intervention. The teacher’s journal logged the experience of the time spent from the piloting activities until the implementation of the exit test. The nature of the qualitative data is well accompanied by the teacher’s journal, as it is a key combination to

contrast insight (Corbin & Strauss, 2014). These sets of qualitative data were gathered and organized in the data analysis matrix to be coded in the next stage. The exit test took place at the end of the intervention.

5.2.1 Validation

Data gathered from different instruments requires a close revision. Ideally, thoughts, insight, and events may appear in various sources of information. The information gathered makes these pieces of data reliable because they can be triangulated in different data sets. Triangulation is the method of validation in this study, as it is expected to have data from different sources (Bazeley, 2008; Corbin & Strauss, 2014). There are five sources of information for this study: questionnaires, interviews, teacher's journal, tests, and rubrics.

The qualitative data gathered from questionnaires, interviews, and the teacher's journal was organized in a Google Sheets document for easy accessibility for research teachers and colleagues. Questionnaires were assembled and placed in the matrix using the complete classroom sample, and interviews were carried out choosing learners at random. Finally, the teacher's journal was registered through an Android application, VoiceNotes (InnovativeWorld, 2018), and later collected into a Google Docs file. In the matrix, the teacher's journal has relevant excerpts, and the totality of the journal was not placed in the matrix to avoid unnecessary saturation (Corbin & Strauss, 2014).

5.2.2 Data analysis methodology

The data collection instrument intended to cover previous, during, and post-implementation stages of the intervention. Regardless of the nature of the data, whether qualitative or quantitative, the instruments were placed in individual sheets in a spreadsheet to allow a more organized and simplified procedure while analysis took place. The data gathered

came from all participants. However, some samples vary as not all the participants attended class due to external factors.

First, it was necessary to implement an entry test based on the reading section of the PET. The reading and writing sections of this test had 35 reading comprehension items, which were taken into account for both the entry and exit tests of this study. The passing score of these tests was 25 out of 35 points. However, it did not influence the overall performance grades in the English Language Arts program. Once the results of entry and exit tests were available, they were contrasted and shared with the participants through the platform. The results were also added to the data matrix.

Qualitative data required the use of the grounded theory approach (Corbin & Strauss, 2014) to properly dissect the data gathered from the qualitative part of the questionnaires, the interviews, and the teacher's journal. A grounded theory approach to data analysis has the flexibility, organization, and insight required to organize chunks of data into a theory based on registered experience on a phenomenon (Corbin & Strauss, 2014). Besides the quantitative measurement regarding reading comprehension performance, learners' thoughts and feelings regarding the strategy and the tools were also recorded.

The first stage of the coding process was to dissect each instrument and later organize the chunks of data in the spreadsheet. Questionnaires had a coding section per question in the spreadsheet. Then, the semi-structured interviews were transcribed and placed into different sheets. Differences in the length and questions of the interviews revealed the need to separate these items. In each interview, coding also had a column to start the process. After sharing the reading scores with learners, they were invited to give their opinions about the tools and using inference as a strategy. This was registered in a Padlet, a platform to create interactive post

boards (HelpScout, 2020) and was treated as a questionnaire. Finally, the teacher's journal was dissected into its most relevant parts for the study and placed into the matrix. The coding process required four rounds to connect patterns adequately. Once the patterns were established, the concepts which would build the subcategories emerged, ultimately establishing two main categories and the core category.

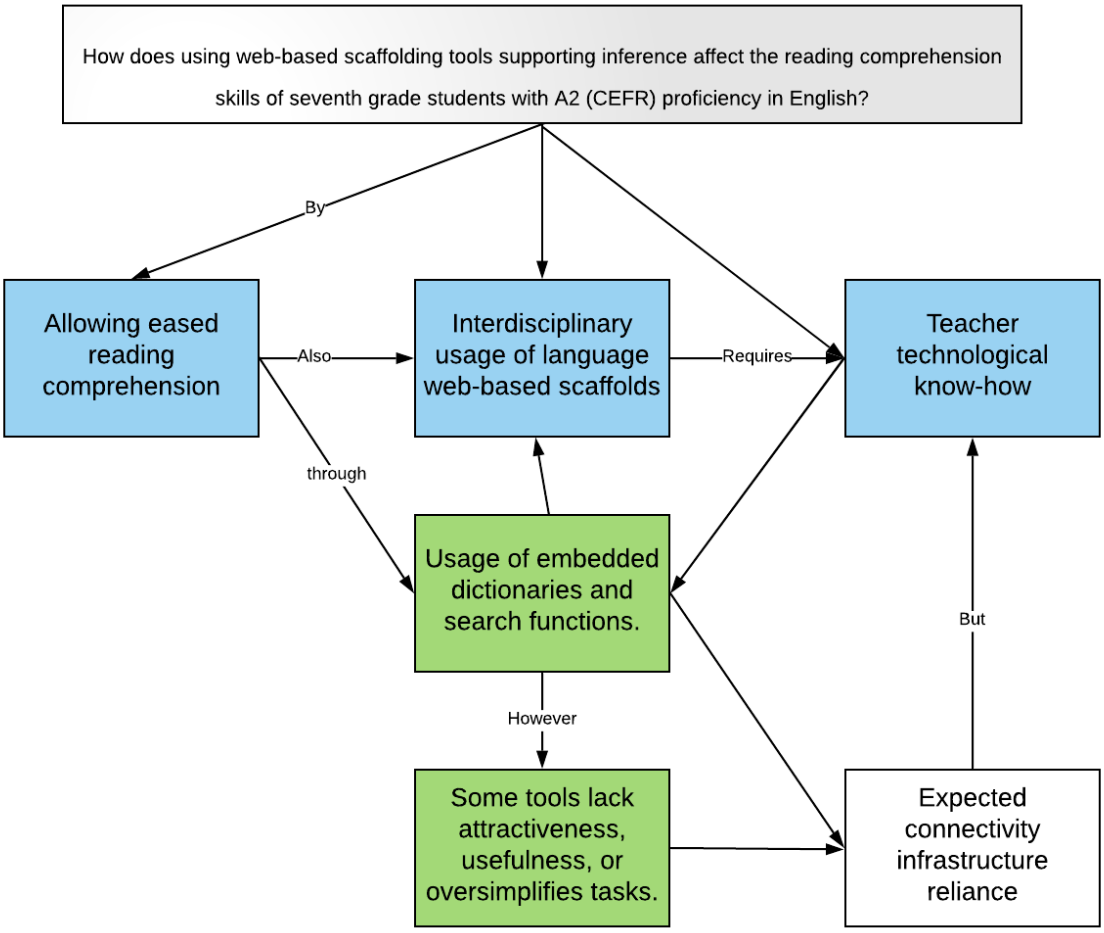
5.3 Categories

5.3.1 Overall category mapping

After breaking the data apart and sorting it in the matrix, and then highlighting concepts to become a block of raw data (Corbin & Strauss, 2014), three subcategories emerged: allowing eased reading comprehension, interdisciplinary usage of the tools, and teacher technological know-how. Additionally, other subcategories not directly connected to the research question were noted, including learner initiative, usage of embedded dictionaries and search functions, lack of attractiveness, lack of usage, or oversimplification in tools. The samples from the data collection instruments were displayed to support these categories.

Figure 1

Subcategories Mapping After The Coding Process



5.3.1 Discussion of categories

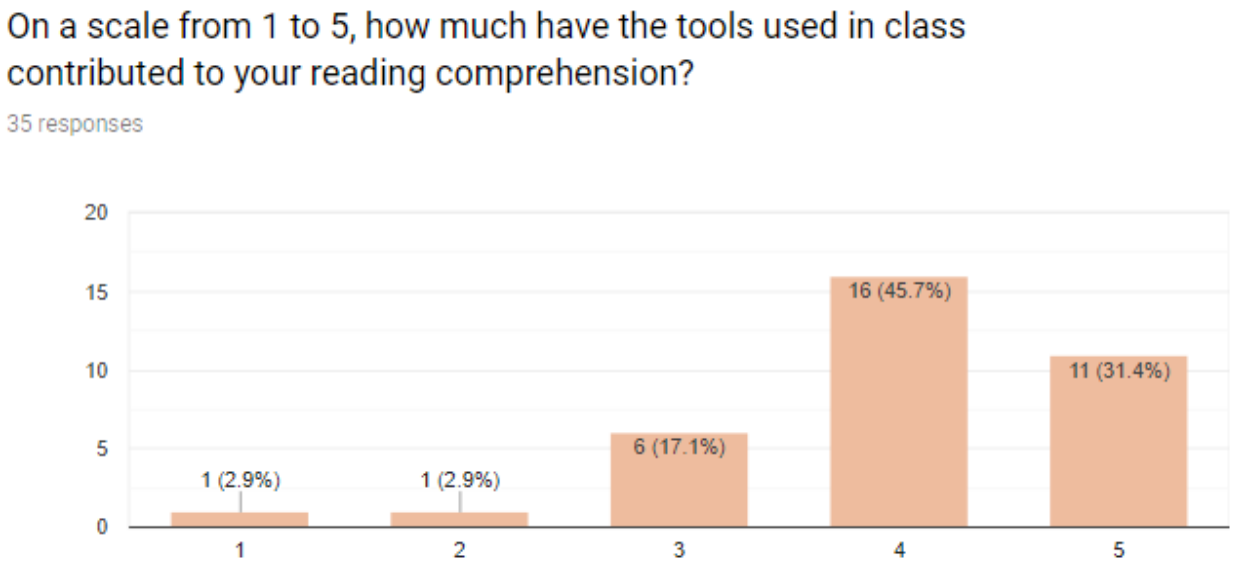
Coding required a steady and balanced process to detect patterns. Color coding through keyword color format in a spreadsheet was needed to achieve this. Once patterns were identified, they were organized into categories through a two-way inductive-deductive thought process, known as axial coding (Corbin & Strauss, 2014).

5.3.1.1 Allowing an eased reading comprehension

As students were allowed to use the strategy and the web-based scaffolds at will, there was an increasing feeling of easiness while reading specific excerpts of the material used online. The questionnaire answers, interviews, and comments registered in the teacher's journal suggest a positive reception on inference and the tools as equipment for learners.

Figure 2

Forms Response Chart



From the registered answers in the needs analysis questionnaire, a large portion of the participants acknowledged how the tools have contributed to overcoming reading difficulties. During the lessons observed, there was also a noticeable change in the questions the participants tend to ask. Learners asked about vocabulary, structure, and due dates. Excerpt 1 shows this from the perspective of the researcher.

Excerpt 1

Teacher's Log Q, February 21, 2019

Average students' questions were less about vocabulary and more about the meaning and purpose of the texts.

This shift in priority allowed learners to focus on making information inference, rather than lexical inference alone, as the web-based scaffolds covered this need in the learners who required it (Cain & Oakhill, 1999). This made learners perceive an improvement in their comprehension and efficiency as readers. Thus, adequate scaffolding fostered information inferences in the participants who relied on the strategy. Excerpts 2 and 3 shows 4 participants' insights regarding the function of the tool and the inference strategy into the confession board in Padlet. Excerpts 4, 5, and 6 present the idea of the participants regarding specific tools.

Excerpt 2

Padlet confession board, February 21, 2019

My experience using technology and inference for reading has been important for me, because it has allowed me to work more autonomously and has improved my reading comprehension as well, because it gives me more tools to do a better work. It also allows me to understand better the texts and ideas, no matter how they are written. I think that using the inference and the technology for the reading comprehension was good because it helped us infer faster the information needed to understand the text.

Excerpt 3

Padlet confession board.

I think that using the inference and the technology for the reading comprehension was good because it helped us infer faster the information needed to understand the text.

Excerpt 4

Interview 2. Participant D.

…now I know that I can do things for myself, like uh, a lot of tools I can use in normal life and it has made me like more independent, so now I know that I can find a lot of tools for different things.

Excerpt 5

Interview 2. Participant P.

P:	Well, it's not that easy, like, to understand some things alone, so and sometimes the resources that you use ... or normally what happens to me that I use resources that normally I didn't understand, so searching for the resources and the vocabulary is very [inaudible 00:01:36] to understand [inaudible 00:01:39].
Researcher:	Okay, have you used anything to fix that?
P:	Yes, like, I started to use dictionaries and [inaudible 00:01:46] apps, like Grammarly that helped me like to have the definitions, so I, like, I obtained more vocabulary, like, during the time I have used these. I can connect ideas better.

Excerpt 6

Interview 2. Participant M.

Rewordify, there the one help me like to understand better like the long text. Like the word that I don't understand it changes so I understand better.

Learners who expressed their lexical needs were scaffolded. Thus they could focus on understanding and making a connection in the text. In addition to the learner's positive perceptions regarding the strategy and the tools, the entry and exit tests showed an improvement in the reading section of the PET. The results of these tests suggest training inference as a strategy to improve reading comprehension could help learners improve their ability to connect the information they required from a text. It is important to remember, the use of web-based scaffolds occurred in class and preparation activities. As the test was paper-based, it was not possible to rely on the tools only in the strategy. Figures 2 and 3 contrast the entry and exit test media values.

Figure 3.

Entry And Exit Tests Media Comparison – 7A

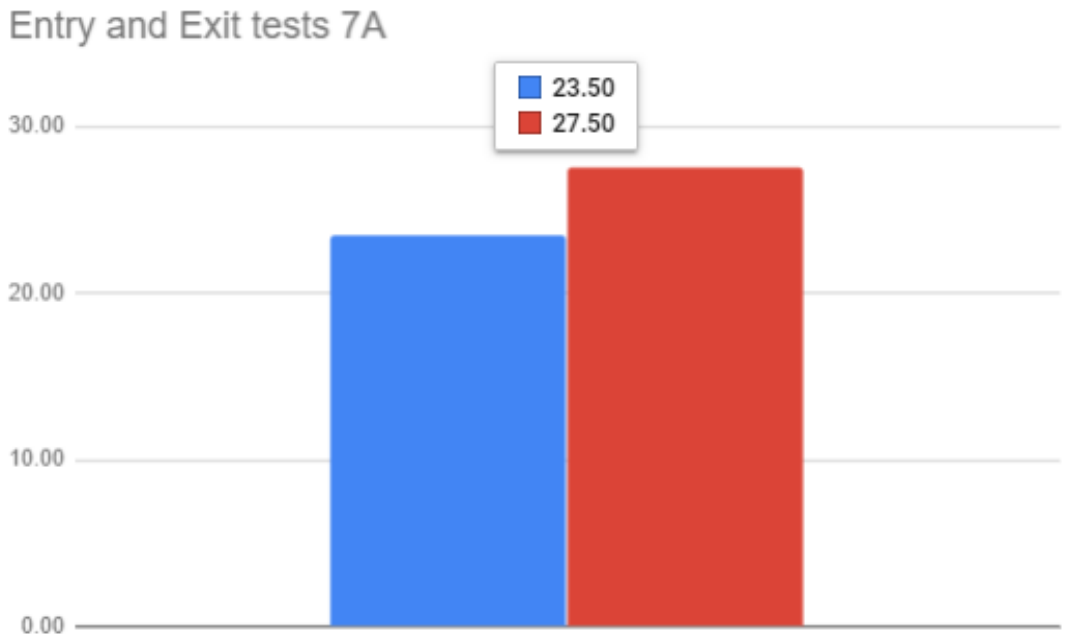
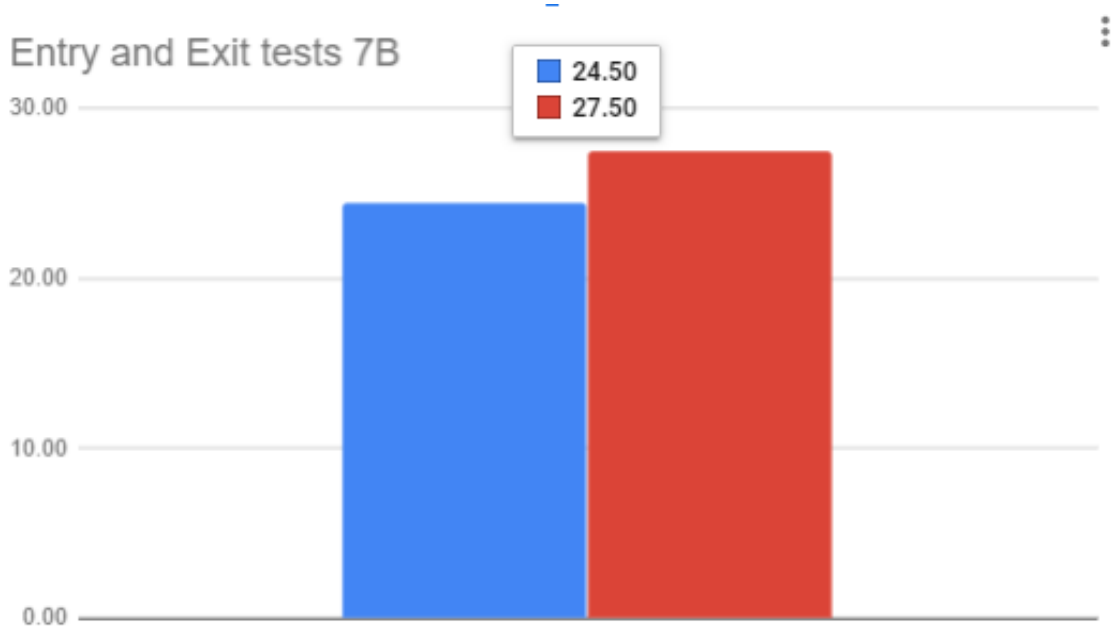


Figure 4

Entry And Exit Test Media Comparison – 7B



5.3.1.2 Interdisciplinary usage of language web-based scaffolds

Data collected on the learner's perception of the usefulness of the web-based scaffolds suggest they started to use them in other school subjects. Learners who found a useful tool or strategy may apply it (Schnotz & Heiß, 2009; Zheng, 2016), not only in the class they learned about it, but also to transfer this tool to other subjects with a similar need. In the following

excerpt, the participant was prompted to discuss what situations they applied the tools and strategy used in this study. They referred to the tool Rewordify and their Social Sciences class.

Excerpt 7

J1 Interview

> "Yeah, I have used the one of summaries? How is called? I don't know the name for eh, what teacher's… Yes, I have used that for World History."

During one of the registered classes, students such as MM in 7B suggested that web-based scaffolds could be useful in the texts assigned in social studies too. This interaction happened similarly in group 7A, mentioning once more the social sciences class. Excerpts 8 and 9 registered this interaction with learners.

Excerpt 8

Teacher's Log Q, February 21, 2019

> As students have replied, they are planning to use this to their advantage and social sciences.

Excerpt 9

Teacher's Log Q, February 21, 2019

> Yesterday, Ss's were expressing the use of some of these tools that can be taken advantage like in social sciences, especially the search function that is used through Ctrl + f.

Some learners have had difficulties in reading comprehension, and the transference of a useful scaffold could be expected (Brush & Saye, 2002; Schnotz & Heiß, 2009). There are two needs mainly registered in the data found. The first need in these texts could be to lower the complexity of these resources through the use of Rewordify. On the other hand, the secondary need was to quickly scan for a keyword, meaning the extended use of the search function (Ctrl+F or Command+F) was also an option the learners started to identify words. The following excerpt shows the mentioned tools explicitly in one of the questionnaire answers.

Excerpt 10

Questionnaire 2

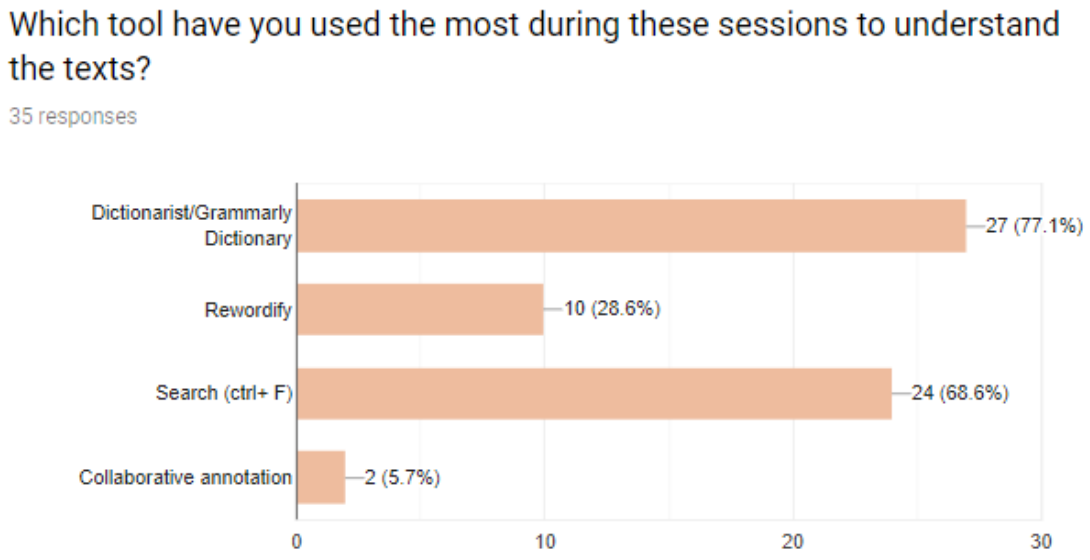
in other classes also, I use Rewordify and search words. Yes, in history to search the name of a Spanish men.

5.3.1.1.1 Usage of embedded dictionaries and search functions.

With the variety of tools to foster the strategy proposed in this study, there is a tendency to prefer some tools over others. In this subcategory, the perception of the frequency of use, or usefulness, of some tools, regardless of whether the application was in the English or social science classes, is registered. In figure 5, students are asked which tool was the most frequently used:

Figure 5

Tool Frequency Use According To Questionnaire 2



The data suggest there is a strong preference for the use of embedded dictionaries over the rest of the tools and is followed by the search function. Other questions in the questionnaire, interviews, and logs in the teachers' journal identify the main focus on the use of embedded dictionaries is to remove the need to focus inferencing on the meaning of words. As vocabulary is a common need (Carlson et al., 2014), embedded dictionaries

serve as quick help for learners during tasks. The following excerpt focuses on the perception of the use of embedded dictionaries as a tool.

Excerpt 11

Questionnaire 2

I think that this is a very useful tool because, it help me to search faster and efficiently a word that I don't understand in a text.

A shared point of view among the answers provided by the participants is how using an embedded dictionary in their browsers has helped them in their connections. Having access to a glossary in the same interface where the test relieves learners lexical needs. This scaffold enables students to focus on applying reading strategies instead of seeking unknown words in certain activities.

5.3.1.1.2 Some tools lack attractiveness, usefulness, or oversimplifies tasks.

Although the use of tools had a positive reception as a means to use the strategy, some tools were found unattractive or inconvenient to some participants. Figure 5 presented collaborative text annotation and Rewordify as the least used tools during the intervention. During one of the interviews, PB was asked why she did not use the tool Rewordify (Goldman, 2014) frequently. This statement acknowledges the tool may be convenient, but it does not contribute to either language development or improvement in their reading performance.

Excerpt 12

Interview P1

> … there are apps you give that we're not using, well they are useful for some people, but for me is not that useful like Rewordify. I haven't used rewordify because I need to understand complex vocabulary and not simplifying vocabulary… So like form my finality, that is like to learn more vocabulary, like to open my vocabulary it is not that useful.

Similar answers regarding lack of usefulness were registered in the questionnaire. Rewordify may have its uses by simplifying the text's lexical complexity, but it was overshadowed by tools like embedded dictionaries. The following excerpts present learners' insight into this tool.

Excerpt 13

Questionnaire 2

> I didn't use it because I do not find it useful more than other tools that help me more such as Dicionarist.

Excerpt 14

Questionnaire 2

> I think that this tool helps to have a better interpretation of texts. However, I haven't used it that much as other tools.

In this case, students who consider a scaffold inconvenient can discard the tool at will, which is a display of autonomy and learning preferences awareness (Dabbagh & Kitsantas, 2005; Shin et al., 2017). Due to the lack of use, or mention of collaborative text annotation, it was decided to discard it for this study. Finally, the use of tools or digital resource platforms depends on other aspects out of student preference or needs.

5.3.1.2 Teacher technological know-how.

Other factors can enhance, or deter, the use of specific technological tools to foster the use of strategies in the classroom (Lee & Calandra, 2004; Soliman, 2016). The teacher's fluency in web-based software such as platforms or add-ons seems to affect the way learners implement technological solutions too. The following excerpt shows one of the participant's opinions on this matter.

Excerpt 15

Interview P1

Google Classroom I think is useful depending how the teacher is using like the app in general. Because some teachers..like..they don't use on the best way and it does not have the results.

As the intervention progressed, it was noticeable that the strategy was being implemented. However, some tools were mainly held in Windows-based laptops, meaning that

users of other operating systems would have to either find an alternative or discard the tool. The following excerpt displays the teacher-researcher's feelings on this matter.

Excerpt 16

Teacher's Log, February 28, 2019

> I feel limited by my training because I would like to create tools that don't depend on certain devices or operative systems.

It is essential to recognize the researcher's limitations regardless of the field. Although not all tools were thought to be used in a wide variety of devices and browsers, the nature of the tools may lead to learners' findings. As it was registered in the teacher's journal, students were able to find alternatives to the recommended embedded dictionary with another one, which served the purpose of using web-based scaffolds. Tools generate recognizable patterns in learners, which can lead to their use in an intuitive manner (Dabbagh & Kitsantas, 2005).

Excerpt 17

Teacher's Log, March 3, 2019

> Some students are using another browser and the tools don't work on that browser, but they are using a dictionary embedded in Grammarly.

5.3.2 Core category

Data suggest inferencing skills supported through web-based scaffolds covered 7th graders' lexical needs while reading. This allowed students to focus on inference and co-construction as they interacted with texts, which increased comprehension. Providing other strategies available through web-based scaffolds, such as lexical inference, learners can focus on the purpose of a text to understand it and make more reliable connections while co-constructing

meaning as they read. The tools provided adequate assistance so that learners who used this advantage to employ the strategy during this study.

5.4 Conclusion

The qualitative and quantitative data collected through the instruments and analyzed in the matrix suggests inference as a strategy enhanced the participants' performance in the reading section of the PET test. Moreover, it presented how web-based tools served aided successes in the selected strategy during class activities and in other school subjects. All in all, the implementation of the strategy and the use of web-based scaffolds allowed a perception of improvement in the participants of this study regarding their performance level in reading comprehension. This perception consolidated once learners checked the results of their entry and exit tests. Finally, the students' views and comments also leave insight into the role of the teacher as a user and promoter of technological tools in the classroom.

In the following chapter, the implications, contributions, further research options, and considerations of the conclusion of this study are presented based on the data analyzed in Chapter 5.

Chapter 6: Conclusions and Pedagogical Implications

6.1 Introduction

The conclusions presented in this part of the document are the result of the process of gathering literature and data, which was later analyzed and contrasted to create categories that answered the research question guiding this study. The purpose of this study was to see how inference as a reading strategy could improve learner's performance in the reading comprehension section of a standardized test (PET). Moreover, the study examined whether web-based scaffolds were a suitable means to foster the use of local inferences in learner's reading activities. As a result, learners changed the priority of reading to identify vocabulary to reading for establishing connections. This connection was possible as the tool implemented scaffolded learners' lexical needs.

This chapter will emphasize how significant this outcome is, plus a comparison with similar studies and the pedagogical implications behind the strategy and tools used with the participants. Hopefully, further exploration of the field will allow similar studies to arise. However, it is critical to include which limitations and challenges can emerge while using tolls that depend on connectivity. Finally, as technology and language learning continues an ever-growing relationship, the opportunity for further research is open, which invites the research community to inquire more and add to the discussion on this matter.

6.2 Comparison of results with previous studies' results

Similar to other studies on the effectiveness of inference as a reading strategy, this investigation confirmed how inferences are a reliable co-construction mechanism in reading comprehension. McKoon and Ratcliff (1992) also stated this in their studies focused on the effectiveness of inference as long as the reading purpose was explicit. Contrasting how van der

Schoot (2016) found that reader inferences complement the need of achieving coherence in the comprehension, it was noticeable that learners focused on their local inference strategy to get the information of the text as a whole instead of the meaning of certain words. The studies taken into account regarding inference presented positive outcomes, which is a perception shared with students once they compared the results of the PET reading section entry and exit tests. However, like Clinton (2016) implied, it is difficult to map how inference is generated in the reader and how the skill affects text comprehension. The present study contributes to another positive result proving that lexical inference can help learners in their reading comprehension, presenting results using a standardized test reading section, in this case, the PET.

The tool used as a vehicle to foster local inferences, web-based scaffolds, had a good reception and continuation in use by learners. Web-based scaffolds are usually used in studies to see how effective they are as a tool in learner's self-regulation in other school subjects such as mathematics, biology, or chemistry (Dabbagh & Kitsantas, 2005). Additionally, scaffolding effectiveness in terms of form and suitability is often discussed (van de Pol et al., 2010). The web-based tool versions presented contribute to how these tools can be used to increase students'reading comprehension.

6.3 Significance of the results

The evidence presented in this study provides insight into the successful use of web-based tools to foster inference to improve students' reading comprehension. First, it supports how local inferences are beneficial to A2 learners struggling with reading comprehension. For the school and other institutions with similar needs, it provides a window of opportunity for future implementations seeking improvement in reading comprehension. Moreover, the MEN also shares this objective of improving students' language skills towards the use of English as a

second language (Ministerio de Educación Nacional, 2013). Realizing this improvement, student engagement towards reading and the tools used was positive.

Considering the positive feedback received from the participants, web-based scaffolds can be an asset for language learners. They aid in their lexical needs, and they can be used in other school subjects taught in school. This study narrows the point of view provided by Dabbagh and Kitsantas (2005), which focused on the use of web-based scaffolds and self-regulation in general. In this current report, specific web-based scaffolds are used to narrow the scope of language learners by covering lexical needs, allowing them to prioritize inference as they read. Taking into account the variety of tools to scaffold vocabulary needs, the web-based scaffolds received generally positive feedback from the participants. Additionally, it presents how the implementation of inference as a reading strategy contributes to favorable performance in standardized tests (Carlson et al., 2014; Hall, 2016), such as the PET. Finally, the introduction of technology for reading comprehension, namely embedded dictionaries or browser search functions, encouraged learners to seek additional tools better suited for their needs, for example, embedded dictionary alternatives.

6.4 Pedagogical challenges and recommendations

This study is reliant on specific elements regarding its strategy and tools used. Firstly, the English language has become part of their academic routine, and incorporating inference as a strategy increases learners' performance level by helping them to get the general idea of texts (Hamada, 2009; van der Schoot & Studies, 2016). Secondly, in contexts where language proficiency is under development, further scaffolds would be required. Bearing in mind that the selection of reading material must be suitable for the target learners, and technological or

resource constraints are not an impediment. If followed, learners can take advantage of the strategy without upscaling the difficulty unnecessarily.

Regarding the tools used, studies, such as this one, are dependent on the digital literacy level of teachers and learners alike. Thus, future implementations require teachers to learn technologies such as Google Classroom and web-based scaffolds depending on the purpose of the intervention. The lack of technological skills tends to lead to inefficient interventions or underuse of the tools chosen (Harris, 2015; Soliman, 2016). Learners expect that teachers' technical knowledge should be sufficient to integrate web-based scaffolds and tools in the classroom appropriately. This preparation is required so that the site and tools selected can be incorporated into the syllabus without interfering with the school's program.

6.5 Research limitations on the present study

A study such as this one requires access to computers and a stable internet connection for each participant. The execution and intervention in this study were possible because of the context's resources, the collaboration of the school authorities, and the participants' active participation during the implementation. Subsequent studies may require adaptations if applied in schools that lack the same conditions, such as public or rural schools.

Although the intervention was carried out with the two groups of 20 students, some samples did not have all the participants' data because of a variety of events such as school parent-teacher meetings, absences, psychological support appointments, and time-table changes. Instruments such as questionnaires were useful in terms of time and revision. However, the teacher journal and interviews presented some difficulties due to time constraints. Additionally, the intervention schedule also required modifications as the school activities interfered with the projected timeline.

6.6 Further research

Introducing inference as a strategy for reading comprehension has revealed an opportunity to use this idea in projects related to reading for specific purposes. For instance, literature-oriented programs, such as the one in high school at the target school, could investigate the role of inferences and literary approaches for students' to analyze literature. A broader study could explore the use of global and local inferences for students' listening or reading comprehension. Additionally, researchers could test which tools most effectively foster inference as a reading strategy for other reading comprehension needs.

Tools such as web-based scaffolds can be taken as a vehicle to implement other strategies to strengthen specific language skills. As an example, online tools can augment either specific input comprehension needs or boost specific production skills. Additionally, studies regarding web-based scaffolds are still needed to observe to what extent these tools can aid language learners in particular production needs, including speaking and writing. Finally, contributions around the use of online scaffolding tools may lead to accurate classification of these scaffolds depending on the language need.

Finally, this study could foster future explorations into the role of digital literacy in the classroom. Digital skills should not be taken for granted, as it has been proven in this study that there is a lack of digital proficiency in both students and teachers. Lack of digital literacy may render digital spaces, such as Google Classroom, unengaging, and stale. Data collection recording is needed for successful implementations of teacher training courses. Specifically, research focused on digital literacy and hands-on use of online creation tools to empower their teaching practice and boost their students' abilities and autonomy.

6.7 Conclusion

This study began with identifying language needs that emerged in classroom instruction. Applying inferencing skills as a strategy is not cutting-edge; however, it is seldom used because standard practices focus on the use of other reading strategies such as skimming and scanning. Using inference to aid learners in reading comprehension proficiency tests is plausible in contexts with similar needs and resources. The web-based scaffolds implemented rely on Internet connectivity and device requirements. Additionally, in instructional terms, time issues should not be noticeable if the strategies and tools used in future interventions could be blended into the program. Moreover, it is crucial to recall the role of digital literacy in teacher training, as web tools may not replace traditional teaching means but complements their instructional practices. Lack of adequate training can hinder further research projects regarding web-based scaffolds and the strategies these tools could aid.

Inference is a strategy worth teaching as it enables learners to create connections (Denton et al., 2017; Hassanzadeh et al., 2019; Wesche & Paribakht, 2009). Web-based scaffolds can support inference generation on struggling readers as it eases the reading process by providing lexical support, either providing definitions or lowering a text's complexity. The participants expressed how the tools, such as embedded dictionaries, allowed them to connect (or infer) difficult parts of the texts used in class. Moreover, The test results demonstrated in **¡Error! No se encuentra el origen de la referencia.** and **¡Error! No se encuentra el origen de la referencia.** show an increase in students' performances of the reading section of the PET mock test.

Teachers should consider inference, and the web-based tools presented here, as an option to aid learners who exhibit difficulties in reading. This research report includes documented uses

of these tools are feedback for developers who want to improve and complement the strategies they have designed. Further exploration could build on these results by identifying additional implementation ideas and technological tools to enhance reading comprehension. Further investigation could develop on these results by identifying other implementation ideas and technological tools to improve reading comprehension. Connecting which strategies to scaffold through web tools, suggesting new successful implementations, and studying web-based tools requires teachers and researchers to familiarize themselves with the applications. Attention to the possible outcomes of interventions is necessary for successful results. A productive implementation takes careful planning because a combination of elements must be in place to create positive learning experiences. Efforts by teacher-researchers should focus on variables such as selecting appropriate tools to use, accessing and learning web-based technology, introducing flexible and fixed scaffolds based on student needs, and fostering student interest. In conclusion, this thesis proposes that employing the practices outlined will benefit student's reading comprehension levels in standardized tests such as PET.

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Appendix A: School Consent letter

INVESTIGACIÓN: CALL: Google Classroom implications and uses in language learning

INVESTIGADOR: César Augusto García-Herreros Machado

//

Rectora

//

Ciudad

Cordial saludo:

Como estudiante de la Maestría en Enseñanza de Lenguas Extranjeras de la Universidad de La Sabana, me encuentro desarrollando un anteproyecto de investigación en el aula de inglés con el cual pretendo revisar la efectividad y el uso de Google Classroom para el aprendizaje y mejora del desempeño en los estudiantes en el área de inglés (Enfocado hacia la parte de reading o writing), identificando fortalezas, debilidades y limitaciones de esta plataforma entorno al desarrollo de lengua de los estudiantes de noveno grado, y apuntando hacia la mejora de los resultados del IELTS cuando deban presentarlo.

Con el fin de lograr este objetivo, en algunos casos solicitaré tomar muestras del trabajo realizado por los estudiantes, completar encuestas y entrevistas con los estudiantes; esto no afectará el desarrollo de las clases. Esto acordando el medio y el momento en que les sea más sencillo a ustedes hacerlo.

Por otro lado, realizaré observaciones durante algunas de las clases de inglés que los estudiantes reciben en la institución. Es posible también que algunas de las producciones hechas por los estudiantes y reportes de calificaciones sean observados.

Esta información me será útil con el fin de analizar fortalezas, debilidades y limitaciones de esta plataforma entorno al desarrollo de lengua de los estudiantes en el aula con el fin de elaborar sugerencias que puedan ser útiles para mejorar y optimizar dichos procesos lo cual redundará en el bienestar de su aprendizaje.

Si se da permiso para el desarrollo del proyecto:

- Estaré dispuesto a responder cada una de sus dudas.
- Usted estará en libertad de no continuar haciendo parte del proyecto en el momento en que usted lo decida sin necesidad de justificar su decisión.
- Las entrevistas serán grabadas si usted lo autoriza.
- Ni su nombre, ni el de los estudiantes, serán utilizados en el reporte final.

Agradezco mucho su colaboración.

Yo, _____ estoy de acuerdo con autorizar el desarrollo del proyecto.

Firma _____ Fecha: _____

Appendix B: Consent letter for participants

TITLE OF RESEARCH: CALL: Google Classroom implications and uses in language learning

HEAD RESEARCHER: César Augusto García-Herreros Machado

Dear participant,

Universidad de La Sabana requires the informed consent of any person involved in a study conducted by researchers at the university.

This project examines the role, advantages, disadvantages, and student's insight regarding Google Classroom and English Classes. Project-related goals include improving the use of Google Classroom to boost students' overall performance, determining the strengths, weaknesses, and limitations of this platform; and looking for alternatives to adapt the use of Classroom beyond a system to turn in tasks.

If you agree to participate in this study, a number of data collection instruments will be used to gather information about your participation throughout the project.

Participant Consent

The participant has been given a signed copy of this form to keep.

I agree to participate in this research.

Name: _____ Date:

_____

The ethical aspects of this study have been approved by the Universidad de La Sabana. All data will be kept confidential, and all information will be utilized only for educational and research purposes.

The researcher has:

A. Provided me with a detailed explanation of the procedures to be followed in the project, including an identification of those. I understand I will be asked to participate in the data collection process.

B. Answered any questions that I have regarding the study.

I understand that:

A. My participation is voluntary, and I may withdraw my consent and discontinue participation in the project at any time. My refusal to participate will not result in any penalty.

B. By signing this agreement, I do not waive any legal rights or release you from liability for negligence. My name will not be explicitly used in the research reports.

I hereby give my consent to be the subject of your research.

Name: _____

Signature: _____

Appendix C: Consent letter for parents

INVESTIGACIÓN: CALL: Google Classroom implications and uses in language learning

INVESTIGADOR: César Augusto García-Herreros Machado

QUERIDOS PADRES DE FAMILIA

Cordial saludo:

Como estudiante de la Maestría en Enseñanza de Lenguas Extranjeras de la Universidad de La Sabana, me encuentro desarrollando un proyecto de investigación en el aula de inglés con el cual pretendo revisar la efectividad y el uso de Google Classroom para el aprendizaje y mejora del desempeño en los estudiantes, identificando fortalezas, debilidades y limitaciones de esta plataforma entorno al desarrollo de lengua de los estudiantes de noveno grado.

Con el fin de lograr este objetivo, en algunos casos solicitaré tomar muestras del trabajo realizado por sus hijos, completar encuestas y entrevistas con sus hijos; esto no afectará el desarrollo de las clases. Esto acordando el medio y el momento en que les sea más sencillo a ustedes hacerlo.

Por otro lado, realizaré observaciones durante algunas de las clases de inglés que su hijo/hija recibe en la institución. Es posible también que algunas de las producciones hechas por su hijo/hija y reportes de calificaciones sean observados.

Esta información me será útil con el fin de analizar fortalezas, debilidades y limitaciones de esta plataforma entorno al desarrollo de lengua de los estudiantes en el aula de su hijo o hija con el fin de elaborar sugerencias que puedan ser útiles para mejorar y optimizar dichos procesos lo cual redundará en el bienestar de su hijo/hija.

Si decide participar en el proyecto:

- Estaré dispuesto a responder cada una de sus dudas.
- Usted estará en libertad de no continuar haciendo parte del proyecto en el momento en que usted lo decida sin necesidad de justificar su decisión.
- Las entrevistas serán grabadas si usted lo autoriza.
- Ni su nombre, ni el de su hijo/hija, serán utilizados en el reporte final.

Agradezco mucho su colaboración.

Yo, _____ estoy de acuerdo con participar en el proyecto.

Firma _____ Fecha: _____

Appendix D: Google Questionnaire 1

Questionnaire Reading Comprehension and Technology

This project examines the role, advantages, disadvantages, and student's opinions about Google Classroom and Reading comprehension.

Your participation is voluntary and highly appreciated. Taking part in this study will allow us to reflect on the use of Google Classroom and explore tools to improve our language skills. Furthermore, information gathered may provide benefits to future students and us.

The following questions will give insight about your perceptions of Google Classroom and its role in the English Class.

All data collected will remain confidential, anonymous and accessible only to the investigator of the study.Your name will not be used in any publications.

If you require any further information regarding this research project or your participation in the study you may contact (xxxxxx)

1. How fond are you to technology in the classroom?

I prefer not to use it.				I use it as much as I can.
1	2	3	4	5

2. How comfortable are you using Google Classroom?

I don't like it.				It's great!
1	2	3	4	5

3. In your opinion, what is the most important feature of Google Classroom?
4. What difficulties have you had with Google Classroom?
5. What would you like to change about our current digital classroom?
6. Can you name any applications which complement the use of Google Classroom? Which ones?
7. How has your school performance improved in the subjects which use Google Classroom?

No change				I have great results
1	2	3	4	5

8. What kind of activities have you done in Google Classroom? (You may select more than one)
    a. Turn in assignments.
    b. Individual Projects.
    c. Group Projects.
    d. Debates / Discussions powered by Padlet.
    e. Communicate with teachers.
    f. Communicate with students.

g. Language Games

h. Collaborative Stories

i. Other:

9. What kind of activities would you like to do in Google Classroom? (You may select more than 1)

a. Turn in assignments.

b. Individual Projects.

c. Group Projects.

d. Debates / Discussions powered by Padlet.

e. Communicate with teachers.

f. Communicate with students.

g. Language Games

h. Collaborative Stories

i. Other:

10. What language skills can take advantage of our current use of Google Classroom? (You may select more than 1)

a. Speaking

b. Writing

c. Listening

d. Reading

e. Intercultural skills

f. Other:

11. What language skills need more spaces or activities in Google Classroom? (You may select more than 1)
    a. Speaking
    b. Writing
    c. Listening
    d. Reading
    e. Intercultural skills
    f. Other:
12. What language skills are the ones you'd like to work to improve the most before the IELTS? (You may select more than 1)
    a. Speaking
    b. Writing
    c. Listening
    d. Reading
    e. Intercultural skills
    f. Other:
13. Are there any apps you use to help you in any moment of the class?

Appendix E: Google Questionnaire 2

Web Tools Questionnaire

This project examines the role, advantages, disadvantages, and student's opinions about Google Classroom, web tools, and Reading comprehension.

Your participation is voluntary and highly appreciated. Taking part in this study will allow us to reflect on the use of Google Classroom and explore tools to improve our language skills. Furthermore, information gathered may provide benefits to future students and us.

The following questions will give insight into your perceptions of Google Classroom, the web tools used, and their role in the English Class.

All data collected will remain confidential, anonymous, and accessible only to the investigator of the study. Your name will not be used in any publications.

If you require any further information regarding this research project or your participation in the study you may contact (xxxxx)

Required

Email address

Your email

1. On a scale from 1 to 5, how much have the tools used in the class contributed to your reading comprehension?

Not much!				A lot!
1	2	3	4	5

2. On a scale from 1 to 5, being one not useful and five most useful, how useful has Dictionarist been?

Not useful				Most useful
1	2	3	4	5

3. On a scale from 1 to 5, being 1 not useful and 5 most useful, how useful has Rewordify been?

Not useful				Most useful
1	2	3	4	5

4. On a scale from 1 to 5, being 1 not useful and 5 most useful, how useful has Search (Ctrl+f) been?

Not useful				Most useful
1	2	3	4	5

5. On a scale from 1 to 5, being 1 not useful and 5 most useful, how useful has Collaborative text annotation) been?

Not useful				Most useful
1	2	3	4	5

6. Which tool have you used the most during these sessions to understand the texts?

a. Dictionarist/Grammarly Dictionary
b. Rewordify
c. Search (ctrl+ F)
d. Collaborative annotation

7. What's your opinion on the tool Dictionarist/Grammarly dictionary?
8. What's your opinion on the tool Rewordify?
9. What's your opinion on the tool Search (Ctrl+F)?
10. Have the tools helped you to focus on other parts of tasks and exercises? How so?
11. What kind of difficulties have you had using the tools?

Appendix F: Google Questionnaire 1 answers

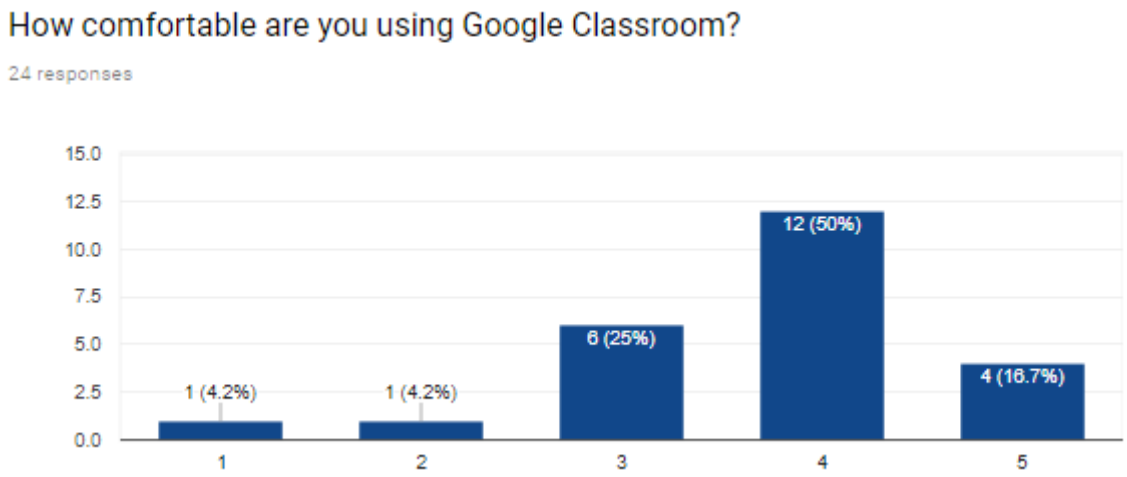

Figure 1. How comfortable are you using Google Classroom? This figure illustrates how fond students are to the platform used in class.

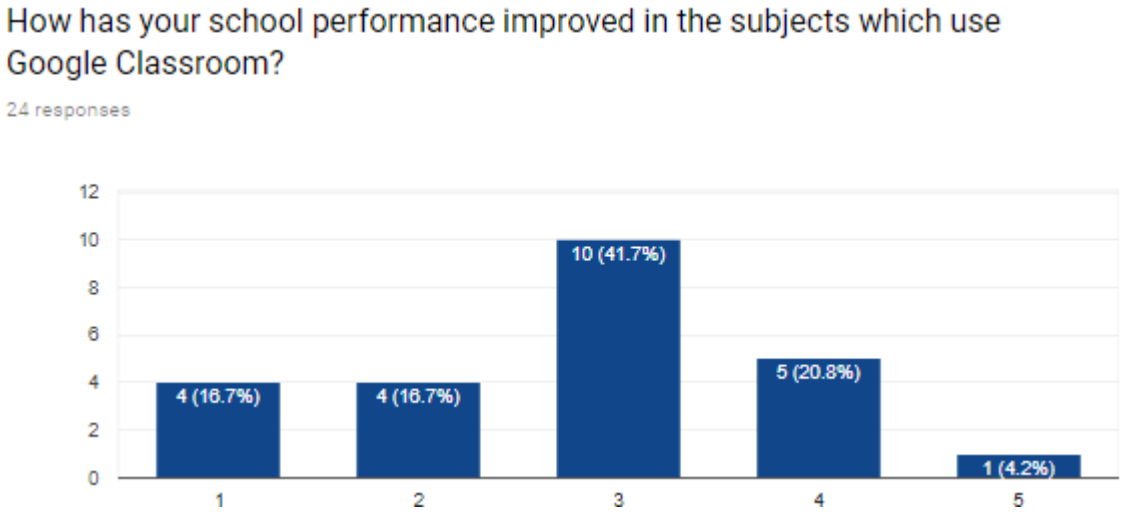

Figure 2. How has your school performance improved in the subjects which use Google Classroom? In this figure, it is displayed how students perceive the relation of Google Classroom and their current performance in class.

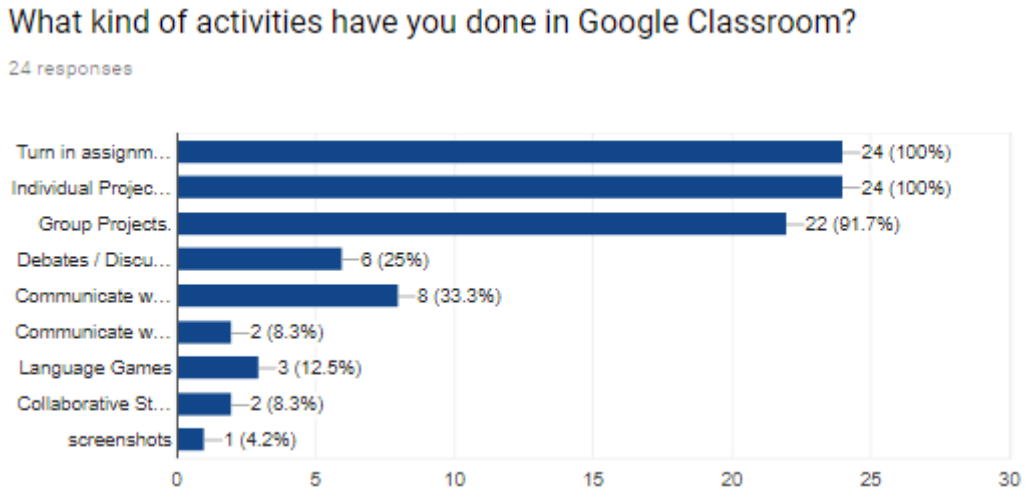

Figure 3. What kind of activities have you done in Google Classroom? This figure shows what activities have students experienced through the Google Classroom platform.

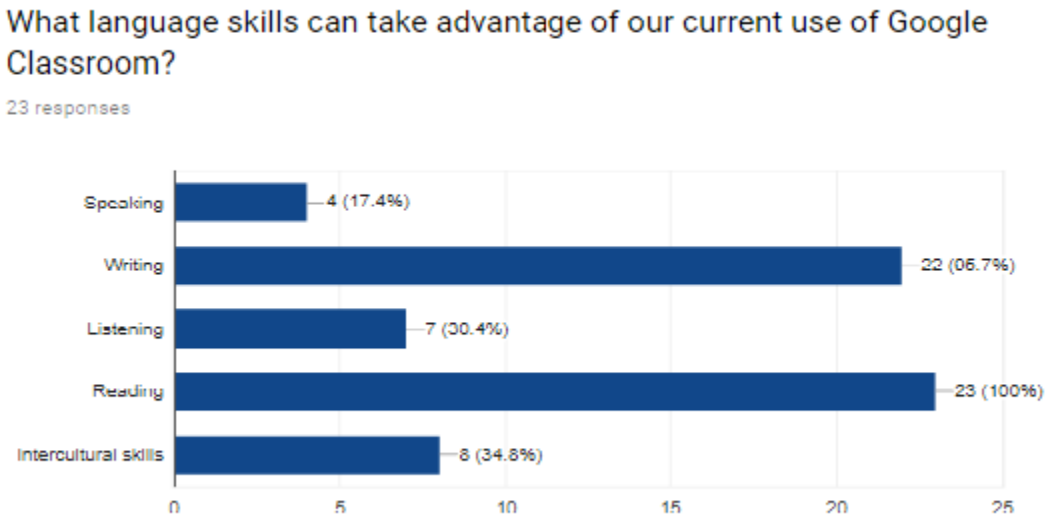

Figure 4. What language skills can take advantage of our current use of Google Classroom? In this figure, students show which language skills can be benefited through the use of Google Classroom.

F.1 Student comments

F.1.1 Regarding Google Classroom and the PET reading mock.

- What is the most important feature of Google Classroom?

We do not waste paper

It gives alerts to tell you when's the due date for your work.

Knowing what I have next or what I have pending to use in the best way my time.

The most important feature in Google Classroom is to be able to submit works and evaluations.

Responsibility

That you can keep track of the things that you hand in and the things that you have done.

The most important feature of google classroom is the way we can organize the topics of the subject

The method to hand the work.

The most important feature of Google Classroom is that it doesn’t waste paper and we can connect easily with the teacher and other students.

Sharing the documents for an easier group work.

Sending assignments virtually, to avoid possible problems caused by physical hand-in.

The access to your previous workshops any time you want, so it is very effective when studying.

The most important feature is that it is very easy to deliver tasks and the teacher can check them easily.

- What difficulties did you have during the reading section of the PET mock?

I consider that the time for developing the test was not enough, so we couldn’t take the time to think and check our answers.

I consider I had difficulties with the management of time, because I dedicated a lot of thinking to every single question and that did not allow me to finish.

During the reading section of PET mock, I had the difficulty of using time properly. Sometimes, I spent more time than the one required for doing each question.

The difficulty I had was the concentration, the lack of it was the reason why I did not finish.

I think that my major difficulty was the time, also that the classroom wasn’t quiet at all so I couldn't concentrate myself very much.

Appendix G: School PET 2017-2018 Reading section results summary

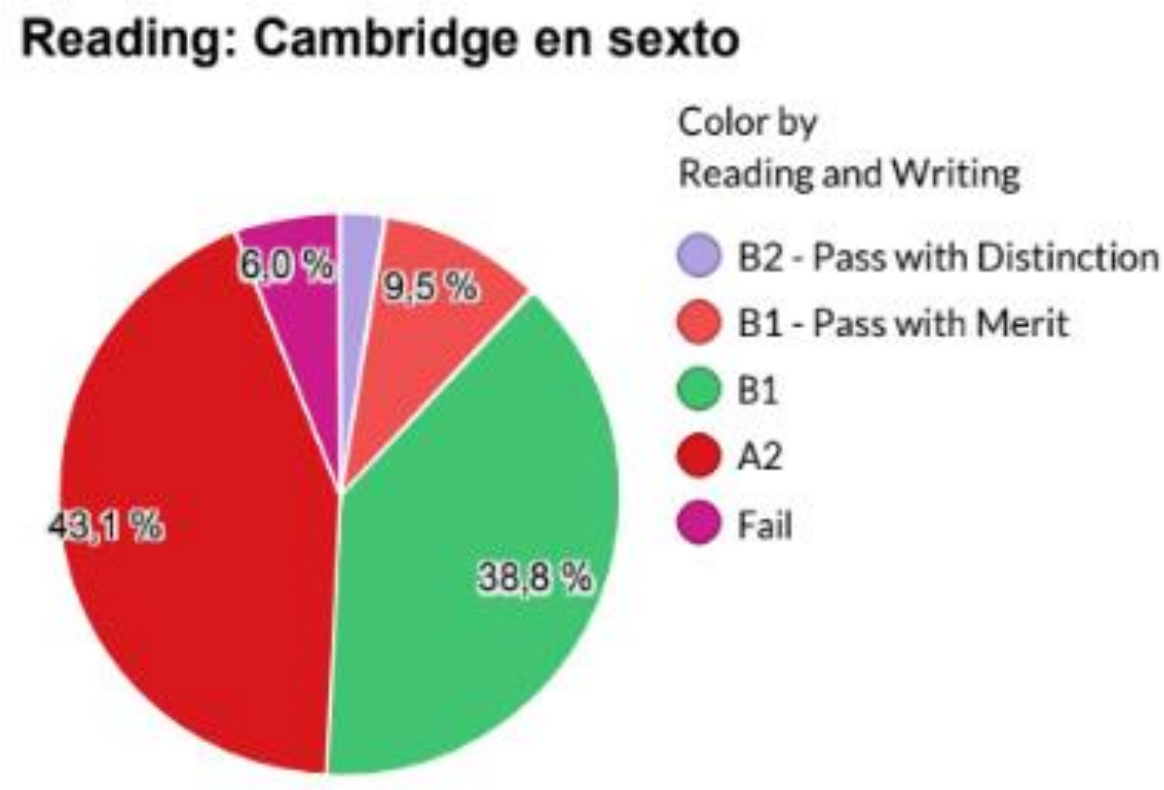

Figure 6 6th Grade PET Reading Section Results

*Information retrieved from the results summary provided by the school.

Appendix H: Implementation plan

IMPLEMENTATION AND PILOTING PLAN					
School	//////////////////////			Teacher:	César García-Herreros
Project:	Fostering Inferencing skills through web-based scaffolds towards reading comprehension performance.				
1 academic hour = 45 minutes					
Week	Date	Delivery Mode	Time Spent in hours in 7A	Time spent in hours in 7B	Activity
1	17/10/2018	F2F		1	Requesting permission at school and updating the consent forms.
	18/10/2018				
	19/10/2018	F2F	1	1	Piloting the questionnaire with 7th graders
	20/10/2018	F2F	1	1	Piloting the interviewh graders
2	23/10/2018	F2F	1	1	Entry test: Reading comprehension section PET style test.
	24/10/2018	F2F	1	1	Prequestionnaire
	25/10/2018	F2F	1	1	Focus group interview
	26/10/2018				
3	29/10/2018	F2F	1	1	Intervention: Modeling Web-based scaffolds and use.
	30/10/2018	F2F	1	1	Intervention: Modeling Web-based scaffolds and use.

	31/10/2018				
	1/11/2018				
	2/11/2018				
4	5/11/2018				
	6/11/2018				
	7/11/2018	F2F	1	1	Intervention: Modeling Web-based scaffolds and use.
	8/11/2018	F2F	1	1	(Students are free to use the web-based scaffolds selected in the rest of the classes freely)
	9/11/2018				
5	12/11/2018	F2F	1	1	Reading activity: Use of scaffolds is expected
	13/11/2018	F2F	1	1	Reading activity: Use of scaffolds is expected
	14/11/2018				
	15/11/2018				
	16/11/2018				
6	19/11/2018				
	20/11/2018	F2F	1	1	Reading activity: Use of scaffolds is expected
	21/11/2018	F2F	1	1	Reading activity: Use of scaffolds to
	22/11/2018				
	23/11/2018				

7	26/11/2018				
	27/11/2018	F2F	2	1	Reading activity: Use of scaffolds is expected
	28/11/2018	F2F	1	2	Reading activity: Use of scaffolds is expected
	29/11/2018				
	30/11/2018				
8	3/12/2018	F2F	1	1	Exit questionnaire
	4/12/2018	F2F	1	1	Exit interview
	5/12/2018	F2F	1	1	Exit test
	6/12/2018	F2F	1	1	Results contrast in class. Entry vs Exit tests. Insights and final focus group interview
	7/12/2018				
	Total Academic hours		20	21	41
	Total time in Hours		30.75		

Appendix I: Lesson Plan Formats

LESSON PLAN - WBS MODELING			
Teacher:	César García-Herreros		Unit 2: Drama in Literature
Group	7A/7B		Date:
Objectives:	Model the use of dictionarist and Google dictionary.		
Main approaches used	Approaches Grammar: Situational Language teaching (Traditionalist), due to the focus on form and its function within a given context, also the class moments follow a presentation – practice- production cycle. Vocabulary: Generative use, as most of the words have been seen by students and have a notion of their meaning, but they are unrelated to their use in reports, language is preset in the exercises and the focus of our class. CALL: Computer assisted language learning, Call has become increasingly popular over the last two decades. Through the use of Google Classroom as a mean of interaction in the classroom between students and teachers which can lead to some concerns, which Beatty has worked on. During this class, google classroom will be the means for the teacher to give students access to the resources needed for the lesson and the means where they will turn in their tasks.		
Stage	**Time**	**Activity**	**Resources**
Intro	5'	The teacher will greet and elicit the objectives of the session.	Teacher's PC, Google Classroom, Smartboard
Warm-up	5'	The students will play an online vocabulary quiz. Common objects which words are rather unknown.	https://www.merriam-webster.com/word-games/vocabulary-quiz Teacher's PC, Google Classroom, Smartboard
Presentation	10'	The teacher will explain the Google extensions to install. After Installing procedure and requirements, the teacher will show how the tool works on certain websites. Students will share possible applications.	Teacher's PC, Google Classroom, Smartboard, Students' computers.

Individual Task	15'	The teacher will share two reading sections from a PET test. Ideally, learners will use the tool to scaffold language.	Teacher's PC, Google Classroom, Smartboard, Students' computers.
Group task			
Evaluation	5'	Students will make a short reflection on the tool. Additionally, they will try to find its use in other school subjects. Once students achieve a connection of information, they will be told about inference as a reading strategy to be used.	Teacher's PC, Google Classroom, Smartboard, Students' computers.

LESSON PLAN - WBS MODELING			
Teacher:	César García-Herreros		Unit 2: Drama in Literature
Group	7A/7B		Date:
Objectives:	Model Collaborative text annotation		
Main approaches used	Approaches Grammar: Situational Language teaching (Traditionalist), due to the focus on form and its function within a given context, also the class moments follow a presentation – practice- production cycle. Vocabulary: Generative use, as most of the words have been seen by students and have a notion of their meaning, but they are unrelated to their use in reports, language is preset in the exercises and the focus of our class. CALL: Computer assisted language learning, Call has become increasingly popular over the last two decades. Through the use of Google Classroom as a mean of interaction in the classroom between students and teachers which can lead to some concerns, which Beatty has worked on. During this class, google classroom will be the means for the teacher to give students access to the resources needed for the lesson and the means where they will turn in their tasks.		
Stage	**Time**	**Activity**	**Resources**

Intro	5'	The teacher will greet and elicit the objectives of the session.	Teacher's PC, Google Classroom, Smartboard
Warm-up	5'	The students will check their last term performance task (Story) and check the comments they had received from their classmates. We will mention the comment, and try to guess who said that.	Teacher's PC, Google Classroom, Smartboard, Students' computers.
Presentation	10'	The teacher will explain how the text annotattion strategy can be used in groups through google docs.	Teacher's PC, Google Classroom, Smartboard, Students' computers.
Individual Task			
Group task	15'	(Groups of 3 students) The teacher will share two reading sections from a PET test through google docs. Ideally, learners will use the tool to scaffold language, and locate the place where the answers are. The classroom must be in complete silence, all interactions must be carried out through comments in the main Document.	Teacher's PC, Google Classroom, Smartboard, Students' computers.
Evaluation	5'	Students will make a short reflection on the tool. Additionally, they will try to find its use in other school subjects. Once students achieve a connection of information, they will be told about inference as a reading strategy to be used and how the tool can help us.	Teacher's PC, Google Classroom, Smartboard, Students' computers.

LESSON PLAN - WBS MODELING			
Teacher:	César García-Herreros		Unit 2: Drama in Literature
Group	7A/7B		Date:
Objectives:	Model Search		

	Function in Browsers		
Main approaches used	Approaches Grammar: Situational Language teaching (Traditionalist), due to the focus on form and its function within a given context, also the class moments follow a presentation – practice- production cycle. Vocabulary: Generative use, as most of the words have been seen by students and have a notion of their meaning, but they are unrelated to their use in reports, language is preset in the exercises and the focus of our class. CALL: Computer assisted language learning, Call has become increasingly popular over the last two decades.Through the use of Google Classroom as a mean of interaction in the classroom between students and teachers which can lead to some concerns, which Beatty has worked on. During this class, google classroom will be the means for the teacher to give students access to the resources needed for the lesson and the means where they will turn in their tasks.		
Stage	**Time**	**Activity**	**Resources**
Intro	5'	The teacher will greet and elicit the objectives of the session.	Teacher's PC, Google Classroom, Smartboard
Warm-up	5'	Students will participate in a word search contest with their books. It is important to find key words, but is there an easier way?	https://www.merriam-webster.com/word-games/vocabulary-quiz Teacher's PC, Google Classroom, Smartboard
Presentation	10'	The teacher will explain how the search function works on any browser.	Teacher's PC, Google Classroom, Smartboard, Students' computers.
Individual Task	15'	The teacher will share two reading sections from a PET test. Ideally, learners will use the tool to scaffold language.	Teacher's PC, Google Classroom, Smartboard, Students' computers.
Group task			

Evaluation	5'	Students will make a short reflection on the tool. Additionally, they will try to find its use in other school subjects. Once students achieve a connection of information, they will be told about inference as a reading strategy to be used.	Teacher's PC, Google Classroom, Smartboard, Students' computers.

LESSON PLAN - WBS MODELING			
Teacher:	César García-Herreros		Unit 2: Drama in Literature
Group	7A/7B		Date:
Objectives:	Model Rewordify		
Main approaches used	Approaches Grammar: Situational Language teaching (Traditionalist), due to the focus on form and its function within a given context, also the class moments follow a presentation – practice- production cycle. Vocabulary: Generative use, as most of the words have been seen by students and have a notion of their meaning, but they are unrelated to their use in reports, language is preset in the exercises and the focus of our class. CALL: Computer assisted language learning, Call has become increasingly popular over the last two decades. Through the use of Google Classroom as a mean of interaction in the classroom between students and teachers which can lead to some concerns, which Beatty has worked on. During this class, google classroom will be the means for the teacher to give students access to the resources needed for the lesson and the means where they will turn in their tasks.		
Stage	**Time**	**Activity**	**Resources**
Intro	5'	The teacher will greet and elicit the objectives of the session.	Teacher's PC, Google Classroom, Smartboard
Warm-up	10'	Students will browse and find the hardest text in English they can find. Then they will explain why they consider it difficult.	https://www.merriam-webster.com/word-games/vocabulary-quiz

			Teacher's PC, Google Classroom, Smartboard
Presentation	10'	The teacher will explain the use of the website Rewordify.com	Teacher's PC, Google Classroom, Smartboard, Students' computers.
Individual Task	15'	The teacher will share two reading sections from a PET test. Ideally, learners will use the tool to scaffold language.	Teacher's PC, Google Classroom, Smartboard, Students' computers.
Group task			
Evaluation	5'	Students will make a short reflection on the tool. Additionally, they will try to find its use in other school subjects. Once students achieve a connection of information, they will be told about inference as a reading strategy to be used.	Teacher's PC, Google Classroom, Smartboard, Students' computers.

Appendix J: Interview transcripts

Researcher: Okay, J1. So, I'm going to give you some questions, first of all, choosing, like, uh, the autonomy project that we're having, and, uh, the tools that we're using online too, that's the tools project. We have too many projects.

J1: Yes, they have.

Researcher: Okay. So the first thing is, how do you at the beginning of the autonomous ear classes that we are proposing?

J1: Em, they're good because they each help me do my vocabulary and my, like, my summaries of the short stories.

Researcher: And have you found many difficulties to start your own work?

J1: No, no, no, no.

Researcher: How about setting your own objectives?

J1: Em, okay, I try to look like my ... my difficulties that I have in English, eh, so I found that, eh, my vocabulary was not the best, and I can improve it, and, um, I can do better stories, so I decide to improve that.

Researcher: Okay, good. And have you had any difficulties during the application of your project?

J1: No.

Researcher: No?

J1: No, no, no.

Researcher: Not really? Nothing meaningful?

J1: No, no, no.

Researcher: And how do you feel five classes later, after starting? Do you feel that you have become more independent? You feel the same? You feel that something has changed, or how do you feel?

J1: Yeah, in the first, in the first classes, I ... I didn't work on it. But now I-I am working, like, all the class, and I am improving my vocabulary and what else.

Researcher: Okay. Now the next seccion, section of questions is about basically Google Classroom. So ... do you like using Google Classroom?

J1: Mm, yes.

Researcher: This is, er, like, it depends on something, or ...

J1: No, I use -

Researcher: Or some classes would been better than more ones, or ...?

J1: There, okay, we use Google Cl-Classroom only for, like, for five classes, um, and in the other classes we don't use Google Classroom, is not, like, that important in

the ... okay, we don't see that change in all the classes, but it is ... yes, it is, it is good.

Researcher: And, for you, is Google Classroom user-friendly? Can you navigate easily?

J1: No.

Researcher: No, sometimes it is -

J1: Yes, it is, it is hard.

Researcher: So what kind of difficulties have you had in Classroom?

J1: Like, when I am in a class, in a Class-Classroom, like I go in technology and I want to move through English because I ... now we are in English, and we have to, like, reload the page and start English again.

Researcher: Okay. Regarding the tools that we have been using, do you know them before the class?

J1: No.

Researcher: No, not really?

J1: No.

Researcher: And do you think this, this kind of tools, this technology's going to help us improve our reading comprehension, for example?

J1: Yes, it can.

Researcher: One of them? Which one have you used more?

J1: Eh, the one of searching words with confidence.

Researcher: Searching words.

J1: Yes.

Researcher: Do you know how to do that before?

J1: No.

Researcher: Okay, and so far, have you used it to reading comprehension, the English class, or for classes?

J1: Mm, like, the strategies? Like -

Researcher: Yeah, the functions. Ctrl + F.

J1: Yeah, I have used the one of summaries? How is called? I don't know the name for eh, what teacher's.

Researcher: For history. Okay. And do you feel that after this project, like, uh, you feel like it's going to be better if you have a Cambridge exam later?

J1: Yes.

Researcher: Why?

J1: It's like, in the Cambridge they ask me, I don't know, like, "Okay, read this piece of text and, and tell as the meaning is. Now I can ... like, I am more sure when I do that because, like, I understand that in the class on T - on Tuesday.

Researcher: Okay, and from what we see, have you used the site Rewordify?

J1: The one of summaries?

Researcher: Mm, the one that you copy and paste the text and it changes some words so it -

J1: Yes -

Researcher: Makes it a little more simple.

J1: Yes, I have used that for World History.

Researcher: Uh, that was the -

J1: Yes.

Researcher: One you used for history. Ah, okay. Good. Good. No, nothing else, man. Thank you. Ah, Cole ...

Researcher: Well, okay, my man. So my first question is, uh, do you like using Google Classroom in the studies?

A1: Yes, I think is, uh, Google Classroom. I love because, like, it helps with, uh, em, all the exercises, and the class is more organized.

Researcher: Can you mention what are two aspects that you find beneficial?

A1: Eh, when they send you, like, a mail saying, like, the notification, you have until this time to turn in your work so, like, you are, eh, control with your assignments, and that is great ... for me. And also because it's very easy to ... to share all your documents and, eh, works with the teacher.

Researcher: You think, uh, the use of Google Classroom is influence by the teacher?

A1: Eh, I don't understand.

Researcher: Like, it depends on the teacher the use of Classroom.

A1: Uh, [sighs] a little bit.

Researcher: For example, have you found any difficulties on that?

A1: No. I don't ... I, like, it's, uh, very ... it's very easy to use Classroom, but I think if teachers don't, eh, eh, like, eh, how do you say, English ... like, if they don't encourage their students to, eh, use, eh, Classroom, won't ... kids won't use it.

Researcher: [crosstalk 00:01:38] thanks, sir. Okay. And have you used the tools that we have in the class during your reading comprehension exercises?

A1: Yes, yes.

Researcher: Um, which ones have we used?

A1: Em, the one of Ctrl + F has been the one that has helped me, eh, the most. But, like, for example, for example, Rewordify, eh, that one I have barely used it because, like, I don't consider it necessary for reading and understanding a text.

Researcher: Okay, and do you know the tools, any of them, before?

A1: Eh, Grammarly. That's like, Grammarly was ... the ... I-I have, I have, I have started to use it before, eh, but just that way.

Researcher: Okay. Uh, have you found useful this technology during the classes?

A1: Yes, because it helps I know to understand better and the actual meaning and purpose of my texts.

Researcher: Do you think that if we take the Cambridge test, is going to be different? Are you gonna feel better at it, like, are you still [inaudible 00:02:50]?

A1: Yes, I think that, eh, it would be very helpful because, eh, the tools are mainly about meaning, so the definitions and ... yes, like, that and it has ... em, like, you will have more vocabulary and you will have ... yes, a more expanded vocabulary when ... you ... with you will identify more words because of tools.

Researcher: How did you feel at the end of the test we had last time, the quiz?

A1: Eh, the one of the fish of the seas?

Researcher: Yes, no.

A1: Eh, well, a little bit, eh, behind. Personal.

Researcher: In the writing part?

A1: Yes, in the writing part.

Researcher: What about the reading part?

A1: Eh, the reading part? No, eh, I think it was, em ... the reading part was a little because of [inaudible 00:03:44] the only part of reading, especially for the article, because ... like, I could search for if there's any quotes that ... quotes, or parts of the text, that could support my, my, eh, ideas.

Researcher: Okay. Do you have any suggestions for the use of this tool in the future?

A1: No.

Researcher: Do you want them to continue the apply in eighth grade, in seventh grade, tenth grade?

A1: Yes.

Researcher: You want them to stop? What do you think?

A1: Eh, I-I want it to continue.

Researcher: Okay, thank you, my [inaudible 00:04:13].

A1: Okay.

Researcher: Oh, eh, I'm gonna record the ... the short interview of like two minutes. Three. Okay, so before we started, eh, these classes, do you know any of the tools that we have used?

D1: No, [inaudible 00:00:15].

Researcher: Very good. And which of the tools have been more interesting for you so far?

D1: Like, the truest, and Grammarly, because of their, the ah, to find the meaning of things, it I, helped me, it helped me to understand [inaudible 00:00:31] better and the interpretation they've given to fix is better.

Researcher: Okay, so you think that eventually using these tools, they can help us, I don't know, improving the [inaudible 00:00:43] test later?

D1: Yes.

Researcher: Why?

D1: Ah, because you will [inaudible 00:00:50] more knowledge, who doesn't really know like some things. Well they know the meaning ah, understanding and to put in [inaudible 00:00:56] ...

Researcher: Uh huh.

D1: And give us like their knowledge, uh more knowledge ...

Researcher: Uh hm.

D1: Maybe that can help us with knowledge.

Researcher: Okay, and have you felt comfortable using Google classroom in the class?

D1: Yes.

Researcher: Is there any difference between the use of Google Classroom in this class and others?

D1: No.

Researcher: No? Not really?

D1: I think with Google we can do [inaudible 00:01:12] activity and we training.

Researcher: Okay, and what's your opinion about the autonomy project? How do you feel in control of your own learning?

D1: I think it's very nice like as you [inaudible 00:01:32], like it is your priority to do the work and that will become a more personal process in order to have a better, I don't know, better abilities.

Speaker 3: Hi, Can I get you something?

Researcher: Yeah, but were in the middle of something but ...

Speaker 3: Okay, don't worry, don't worry, it's fine.

Researcher: Is it too serious? Or can you?

Speaker 3: No no no, no no no.

Researcher: Okay. Well eh, D1 do you feel any, at any moment like lost at the beginning of the projects?

D1: No, they give you like things to do.

Researcher: And like this, like four or five lessons later, have you felt that you have become a more independent learner? Or have you found a difference right now, is there a difference?

D1: Yes, I think um, like I have a difference because like now I know that I can do things for myself, like uh, a lot of tools I can use in normal life and it has made me like more independent, so now I know that I can find a lot of tools for different things.

Researcher: So you, so now you know that you can find the tools on your own?

D1: Yes.

Researcher: And have you found any?

D1: No, all this like, like mainly the ones that I'm working with but like some YouTube, it makes a person and puts them like, as like conversations ...

Researcher: Uh hm.

D1: [inaudible 00:02:46].

Researcher: Okay, great, so you find your own research's?

D1: Yes.

Researcher: Great, that's good, cool.

D1: Okay.

Researcher: Two minutes, ready. Thank you D1.

Researcher: Well, okay, Mr. Uh, the first one. Uh, have you had any difficulties using Google Classroom?

M1: No.

Researcher: No. Um, in all the classes that used Google Classroom, and ... what is the function of ... of Classroom mean?

M1: Like, to organize, like the ... like the ... like homework or the task, like much better than me putting the information in the board.

Researcher: Okay. You think it's user-friendly?

M1: Um ...

Researcher: That the Classroom. Is it user-friendly? Like you can use it easily-

M1: Yes.

Researcher: with no problems? Okay. Can you mention two aspects that you found beneficial in Classroom?

M1: Eh, the tools count, like, the Google Classroom tools count, like Grammarly and ... the dictionaries.

Researcher: On the tools connected -

M1: Yes.

Researcher: There. And ... what difficulties have you had in Classroom?

M1: Eh ... like, sometimes when we entered to a new, new ... eh ... How do we say that? New ... a new class?

Researcher: Mm-hmm (affirmative).

M1: Like, I, it is like difficult to ... to use like begin dating.

Researcher: Ah, when you've been invited to a new class?

M1: Yes.

Researcher: Huh? That's okay. Well, and now about the tools. The tools that we have used are dictionaries, Rewordify, control F function, um, text annotation groups and that's it. Um, did you know them before the class?

M1: No. I used control F, but I didn't remember, like ... long time ago I used it, like, used for history exam.

Researcher: And do you think these kind of tools can help us prepare for the next exam. For the next computer exam, for example.

M1: Yes.

Researcher: Why?

M1: If you're ... it can help you because, like ... can you repeat again, the question?

Researcher: Do you think that using the tools can help us improve in the [inaudible 00:02:22] later?

M1: Maybe because it could, like ... me with the control F I find like re- ... relevant information, like, of the question.

Researcher: So you can say that control F helps you make connections easier?

M1: Yes.

Researcher: Okay, and do you think they help you in reading comprehension?

M1: Eh, they were ... the, the tool of re- dify?

Researcher: Rewordify?

M1: Rewordify, there the one help me like to understand better like the long text. Like the word that I don't understand it changes so I understand better.

Researcher: And about Friday ... Friday projects? What are your feelings as an autonomous student. What difficulties do you have, what things do you like? What do you think?

M1: Like the difficulties were like knowing what I can improve, like ... I know I need to improve like very ... too much things. Like, yes. So, like, one of ... the things that I like, like ... most of this project was that I could choose like [inaudible 00:03:37] that I, um, in the worst, like ...

Researcher: So was that problem or a benefit?

M1: A benefit.

Researcher: A benefit. Okay-

M1: That I could chose in what, in what can I improve.

Researcher: As a student, like five classes later, we have been doing this for a while, do you feel different as a student?

M1: Yes.

Researcher: Why?

M1: Because, like, I use ... this the ... like a site that help me to ... to use better listening and to use better spelling and it was, like, in the case that we have [inaudible 00:04:13], I didn't have too much spelling mistakes.

Researcher: Yeah, and you didn't have too many mistakes. That's what's good, I guess. Um, okay, so for example, in the last quiz, how did you feel at the end of the test. How did you feel when you finished the quiz?

M1: Good because I knew like, that I checked the spelling and I ... and it was like, not, not bad.

Researcher: Do you think that the tools that we use influenced the results of the quiz?

M1: Eh, which ones, the ...

Researcher: All of them. Doesn't matter, can be the sites, can be the dictionaries. Do you think that the tools had an influence in the-

M1: Yes-

Researcher: result of the quiz?

M1: in the, in the quiz of [inaudible 00:04:55] text.

Researcher: Yes.

M1: Yes, because ... in, like, (laughs) I used very much control F in that project.

Researcher: (laughs) okay.

M1: Because I was trying to search like ... like ... what was, like, the main purpose of the text, so I searched for the word "birth", and that like appear many times, so that help me to ... to know the relevant information.

Researcher: Okay, good. Thank you.

M1: [crosstalk 00:05:22].

P7: In Spanish with you?

Researcher: No. It has to be in English. Uh, well hold on. There are some questions that we are going to have first about Tuesdays.

P7: Okay.

Researcher: And then about the tools we use in class. Okay, hear?

P7: Yes.

Researcher: Okay. So, how do you feel at first when you start the autonomy projects?

P7: Not that good, not that [inaudible 00:00:33], really I just, like, I'm not that independent [inaudible 00:00:40] like I ... normally it depends on what the teacher tells you to do.

Researcher: And how do you feel now, five classes later?

P7: Well, I am very, like I identified like 15 [inaudible 00:00:54] on how to do it without being, like, with a teacher. [inaudible 00:00:57].

Researcher: Em, from this time, like do you feel like the motivation is more dependent on your side or you have more external factors?

P7: No, I think I'm like, I motivate myself because I need to try like new things to do.

Researcher: Okay. Have you had any difficulties on your own?

P7: Yes.

Researcher: Which ones?

P7: Well, it's not that easy, like, to understand some things alone, so and sometimes the resources that you use ... or normally what happens to me that I use resources that normally I didn't understand, so searching for the resources and the vocabulary is very difficult to understand the connection of ideas.

Researcher: Okay, have you used anything to fix that?

P7: Yes, like, I started to use dictionaries and Dictionarist apps, like Grammarly that helped me like to have the definitions, so I, like, I obtained more vocabulary, like, during the time I have used these. I can connect things better.

Researcher: Okay, now let's go all the tools. Uh, how do you feel with Google Classroom?

P7: Eh, Google Classroom I think is useful but depending how the teacher used it, like the app in general. Because some teachers, like, don't use the, like, on the best way and it does not have the results.

Researcher: So it depends a lot on the teacher.

P7: Yeah, it depends a lot of how the tool is used.

Researcher: For example.

P7: Eh, for example, on Science we have one, like, Classroom, but that's not really used and when we have normal words, like, to deliver on internet, we never use Classroom to deliver but we need to deliver it like on another [inaudible 00:02:46]. So, just like to start using all the responses, Classroom, [inaudible 00:02:52] because some teachers [inaudible 00:02:55] use it to [inaudible 00:02:56].

P7: Today we are going to work on this and broadly, for example, in Spanish, uh, we have one and we don't use it for that really. We have that just to, well you are going to have [inaudible 00:03:08] today that we didn't use like anything to [inaudible 00:03:11].

Researcher: So can you tell me two aspects that you find really beneficial from Classroom?

P7: Eh, the thing that tells you, like, the hour or the seconds that I need to deliver the, the word.

Researcher: Okay.

P7: Because you can plan, like, exact times and things you need to move for you to have the homework [inaudible 00:03:34] on time and the other thing really use, useful, I think, is the one that, eh, the Classroom finding part, like ...

Researcher: Uh-huh.

P7: Because like depending on what you need to tell me, like, to see the classifications instead of [inaudible 00:03:46].

Researcher: Okay. Do you think that technology can help us prepare for a test, like for the Cabbage test?

P7: Technology?

Researcher: Yeah, the Classroom, the tools, everything.

P7: Well, on some tests, yes. Not on all because you need, like [crosstalk 00:04:07]. Also, between, you know, how you learn but, eh, some tests you can get in, like, using different resources. Like, in [inaudible 00:04:20].

Researcher: Okay, and before this class, before the intervention, do you know many tools or are all the tools that you know or some of them are new because of the class?

P7: Eh, some of them, but like most of them are new. Eh, like, I used to know the, like, Classroom, um, Grammarly, just because of a different [inaudible 00:04:43] and I started using it because of that but, eh, on the li-, like there are apps you get that I'm not using and I think, I don't find that well, they are useful for some people but for me, it's not that useful.

Researcher: Uh-huh.

P7: Like, Rewordify, I haven't used Rewordify because I think I need like to start understanding complex vocabulary and [inaudible 00:05:06] simplifying [inaudible 00:05:07].

Researcher: Okay.

P7: So, like for my finale, that is like to learn more vocabulary, like to open my vocabulary to more complex and different words is not that useful to me.

Researcher: Okay, and you think that's all the tools help a lot reading comprehension better?

P7: Not exactly. Like, I have, I am the people that I need, like, to work in, on reading comprehension, that type of thing. That's not one of my strengths, but I don't believe, like, [inaudible 00:05:46] the delivery of the apps reading comprehension for.

Researcher: So you prefer to [inaudible 00:05:59] more.

P7: Yeah.

Researcher: Rewordify is too simple.

P7: Yes.

Researcher: But the dictionary, the dictionary for example, the floating dictionary is better.

P7: Yes.

Researcher: In that case. So you prefer that one. Funny.

P7: Yeah, people usually like [inaudible 00:06:12], but like I'll go to Carmada, like after school, I'll go to Carmada and I need to have, like, um, strength on my speaking [inaudible 00:06:23] culinary, not on understanding things, these things well where this is [inaudible 00:06:29].

Researcher: So you can take that as an objective for your autonomous plan.

P7: Yes.

Researcher: And that's your objective, right now.

P7: Yes.

Researcher: Okay. Any opinions extra about the classes?

P7: Mmm, yeah, something. Eh, I've been [inaudible 00:06:45] easy to ask [inaudible 00:06:45].

Researcher: I Excel?

P7: I Excel sometimes is useful. I've been use it, like, use it more, but like tried to search enough that is similar to I Excel, but that does not, like, eh, give you what you need each day and you are wrong to go backwards, just like escaping this [inaudible 00:07:11] because normally, or what happens to me is that each time I, eh, take backwards, I just start stressing and I don't know, like, I don't know anything. I don't know, I don't. I'm not being attentive of the exercise but of the person teaching so I [inaudible 00:07:29] and I just kind of [inaudible 00:07:31].

Researcher: So you focus on the score, not on the objective.

P7: Uh-huh (affirmative).

Researcher: Okay. I understand the idea. Well, yeah, I wanna try that.

P7: Please, because it happens too much really. Sometimes, you told us, 40 minutes [inaudible 00:07:40] I'm 39 units, I don't know, 75%, seconds later I'm on 60. It just makes [inaudible 00:07:50]. I think people, that's what normally people [inaudible 00:07:55].

Researcher: Okay, taken. I wanna change that.

P7: What do you mean change that?

Researcher: Okay, thank you, P7.

Appendix K: Teacher journal excerpts

2019/02/21 9:40:48

I have decided to change the application I was using to log the registry of my classes.
Using that Google docs application was not sufficient.
Additionally it required time.
This strategy was interfering with instruction time in the classes.

2019/02/21 9:43:05

Regarding the reading hub.

2019/02/21 9:43:22

The social sciences teacher like the idea too and
He's starting to use applications
For supporting reading comprehension in his class is to.

2019/02/21 9:43:47

As students have replied they are planning to use this
To their advantage and social sciences.

2019/02/21 9:48:51

I have to design the hub so students access and
Remember the tools because they were not
Using them naturally, collaborative text annotation is not used at all.
However, these sites what is a proper tool and platform
For them to remember the tools and use them many
Of them found
The hub attractive and are using the tools more often.

2019/02/21 9:51:54

Some students have shown me that the dictionary
Has a competition in the application grammarly.

2019/02/21 9:52:43

The application also provides a dictionary which
Can help them understand better and
It's integrated into their browser.

2019/02/21 12:08:38

During the class with 7A we had a performance task.

2019/02/21 12:10:31

Rewordify was used by three students.

2019/02/21 12:10:59

Most of the students were using the embedded dictionaries.

2019/02/21 12:28:36

Brother.

2019/02/21 12:28:41

Student questions were less about vocabulary and more
About meaning and purpose of the texts.

2019/02/21 12:28:44

The activity is running smoothly.

2019/02/21 12:29:54

Some students are using another browser and it does the
Tools don't work on Safari.

2019/02/21 12:30:05

They're only able to use rewordify.

2019/02/21 12:30:25

They don't want to use and Google Chrome as a browser.

2019/02/21 12:30:52

Students are expressing the use of some of
These tools that can be taken advantage like
In social sciences especially the search function that is
Used through Ctrl+f.

2019/02/21 12:31:58

The Google sites hub was created to access the tools,
And it has reminded them to use them.

2019/02/21 13:09:13

The class is over internet connection was a problem in
The end because the connection was
Unstable making the apps totally useless.

2019/02/21 13:09:41

Having everything working with internet is a problem
Sometimes because once we don't have a connection
We may get to the pendant on the toes that are online
And their task.

2019/02/21 13:13:00

I feel limited by my training because I would like to
Create tools that don't depend on the internet, certain devices or operative systems.
However I have to be patient for this.

2019/02/21 13:13:18

Action research allows me to modify things along
The way it supposedly does, but sometimes I feel
That the plan beginning editions were necessary
To meet the rest of the project work.

2019/02/21 14:26:17

New entry log. 7B learners have a long writing task
Programmed regarding environmental issues.
They have to connect the theme of a poem and
An article, to later create a persuasive text.
Learners were told about the task. Students like
E are fatigued as the end of the day is close.
A student requested to create a canva instead a text.
Once the requirements were explained students started writing.
Student m looks confused and asks me if he can use the tools,
I reply.
Student j uses rewordify to simplify a piece of the article.
Two students request to sit on the floor as they need
To find a closer plug to charge their computers.
Student M asks how to do spacing.
Student d and f are adding references to their text using
Easybib.
Student S requests to be excused as he does not feel well.
Student AB access Google classroom to look the
Images which have references examples.
When asked aloud, no student complains about
The vocabulary, the tools seem to work. However,
Their priority is writing.
Student m complains that his app switched to
Spanish, aren't they supposed to like translation? Funny.
Learner asks if they can use grammarly to aid proofreading.
I hesitate, but I will allow it after they proofread by themselves
First.
Student ad playing bonk.io, I intervene and ask him to
Reflect, then focus on the task. We are interrupted by
Some students are producing noise outside the classroom.

2019/02/22 9:14:46

Start the class with 7th grade.

2019/02/22 9:15:03

Today they are supposed to work on their personal
Learning portfolios. Each learner has a different
Learning objective
Compared to the last sessions, most learners were ready
By the time I got here. Sv is looking for an equivalent to pico y placa.

I request SG to talk in English. Et and her group are
Outside recording a mini play. Tp asks on how to
Evidence speaking in his portfolio.
Mj was using something for math, a correction.
Intervened.
The classroom gets messier as everyone is doing the tasks.
There is less movement.
Accidentally interrupted mbs group recording on public
Speaking. At least they laughed.
Gt is using dictionarist.
Sv wants to be c1. I correct a pronunciation mistake
From ft
SM has dictionarist and Google dictionary,
Doble clicks, and the pop up appears. 25 minutes, not many
Questions about vocabulary. SV needs help adding pages in
Google sites. Mb group is recording for the third time,
They ask me to see if they sound ok.
They are talking about how to have a good connection
With the audience.
Ft seems to be playing sometimes, and keeps giggling.
I draw close and switches to a site to practice listening.
Mm shows her portfolio, her browser has dictionarist,
Just out of habit clicks a word. Her portfolio seems really complete.
ADB is struggling with his listening project, he added some songs
From lyrics training. The song sang by Jackson is challenging,
He needed help in sorting out the controls.
People who need listening improvement have used
Lyrics training and BCLT. Some learners focused too much
On their projects, few in the elaboration of their portfolio.
St has no problems in listening, but she decided to work on it.
She has a good registry about her scores in the site.
Mb sl and gt are editing their 3 minute video.
Tp eagerly shows his portfolio progress, so he has done a
Little bit of everything today. He plans to record next.

2019/02/22 9:56:36

Class is over, I have seen some students advancing
Their portfolios fortunately after the 6 session
I have seen some changes in them also I see that
They're becoming a good morning dependent by using

The tools so they're mostly asking me about ideas or
Things to add to their portfolios or extra activities on
Their own happiness lane reading comprehension actually
Think it's kind of good.

2019/02/22 13:37:10

And so far I have seen done most of the computers
Most, like 85% of them have the applications
I wanted to share with the students.

2019/02/22 9:56:36

Class is over have seen some students advancing
Their portfolios fortunately after the 6 session
I have seen some changes in them also I see that
They're becoming a good morning dependent by using
The tools so they're mostly asking me about ideas or
Things to add to their portfolios or extra activities on
Their own happiness lane reading comprehension actually
Think it's kind of good.

2019/02/22 13:37:10

And so far I have seen most of the computers here
I dare to you say 85% of them have the applications
I wanted to share with the students.

2019/02/22 13:38:01

So they have used the websites however the one that
They haven't used much is collaborative check sanitation
Maybe because it is not part of instructions and
It's actually funny because most individual so I haven't
Seen it yet in a cooperative task I may have to assign a
Test to explore this possibility with them.

2019/02/22 13:38:37

I plan to the test during test taking advantage of the
New system to maintain the school which seems to
Aim to ring skills properly but not connected with the
Common european framework. The nwea.

2019/02/25 9:12:33

Monday class I guess. I was sent to 7A, as
They don't have music class today.
They are to continue writing their persuasive text.
During the task they can check external resources,
Where they can use the web tools.
Jm still does not use the tools, he unistalled them..

He has a mac. Cf has connection problems. Jr uses
Search to look for a word in a text and track a paragraph.
DV asks for a reminder on how to use Easybib. I have check
Some computers, I can see about 4 to 5 extensions,
They appear to be educational and not the ones I gave
Them first, maybe they found more. Ja asks advice,
And clarification differencing reference and citation.
They have become more conscious about referencing.
Tm ignores a mistake grammarly marked, he corrects
It, once he is done writing his part. He uses dictionarist
In the article, then continues writing. Sm requests to
See the images used in classroom to check his references.
Well, they're asking more about references now, and no
Questions about vocabulary so far.
Pb and as think they won't have enough time to complete
The task and they tell me. CF has a link list, but no references
Yet. Giving instructions and writing the log is messy sometimes.
IG questions about references.
Ig considers she has done a paragraph.
I'm curious and ask aloud if anyone has had any problems
With vocabulary, they reply they haven't. I ask if they're
Using any tools, they reply they have.
Ig uses grammarly for proofreading. P7 seems stressed
As the class is almost over, she has written 2 paragraphs.
Jr stretches, yeah I'm tired too. Some students look around
As it is almost time for recess, Ja asks dm about recess time.
AS tells P7 not to write so much.
Again, most questions are about citations and references.
Not bad, but kind of curious.
Finally, a question about uncountable nouns.
Still, vocabulary questions have dropped considerably.
If it were a writing project I'd like to see if their
Vocabulary expanded. I'm happy as they are a little
Bit more rigorous in academic integrity, most of them.
DM lost part of his portfolio by overwriting other task
On it. Mr is talking ti dc about how close the last day is.

2019/02/25 18:18:53

During the last class with somebody similar observation
But I couldn't use my cell phone because I left it in the teacher's office.

2019/02/25 18:19:36

So tomorrow and on Wednesday I will apply a questionnaire.

2019/02/25 18:19:45

Being used the most and to also check their insight about

The tools used so far.

2019/02/25 18:20:17

Additionally, my co-workers and my boss have become
A bit more curious about the things we're doing in
The classroom. My boss doesn't like it so much because
Sometimes it interferes with the program and right now
We are under a tight schedule because there are many
Events at school academic events for example we have
More examinations and we also have some external visits.

2019/02/26 14:36:35

Enter route 7A. The class is awfully noisy as they had
Science class and a task they couldn't, as they had that
Problem. After controlling the group, some students explained
The reasons behind all the fuss at the beginning of the class.
I have to apply a questionnaire and some interviews at random. It didn't work.

Appendix L: Entry and Exit test results 7A

7A	ENTRY	%	EXIT PET TEST	%
PB				
CD	30	85.7	33	94.3
SC	9	25.7	8	22.9
JD	23	65.7	28	80.0
IF	23	65.7	27	77.1
CF				
IG	29	82.9	31	88.6
DH	24	68.6	26	74.3
JJ	19	54.3	20	57.1
JL	27	77.1	31	88.6
ML				
SM	16	45.7	20	57.1
DM	26	74.3	29	82.9
LO	24	68.6	30	85.7
JR	20	57.1	22	62.9
NR	24	68.6	29	82.9
IR	15	42.9	17	48.6
AS				
TU				
DV				
MEDIA	23.50	67.14	27.50	78.57
MODE	24.00	68.57	31.00	88.57

Table 1 Entry and Exit test results 7A

Appendix M: Entry and Exit test results 7B

7B	ENTRY	%	EXIT PET TEST	%
MB	14	40.0	16	45.7
AB	22	62.9	31	88.6
ADB	18	51.4	16	45.7
DD	30	85.7	34	97.1
LD	24	68.6	27	77.1
MG				
MH	27	77.1	32	91.4
SL	22	62.9	26	74.3
JM				
STM	18	51.4	27	77.1
JMQ	28	80.0	31	88.6
VM	27	77.1	30	85.7
MM	26	74.3	27	77.1
TP	14	40.0	17	48.6
ET	25	71.4	28	80.0
ST	30	85.7	34	97.1
FT	20	57.1	22	62.9
SV	31	88.6	32	91.4
STV	28	80.0	31	88.6
VLL	23	65.7	26	74.3
MEDIA	24.50	70.00	27.50	78.57
MODE	14.00	40.00	31.00	88.57

Table 2 Entry and Exit test results 7B

Appendix N: Padlet Registry

Your experience using inference and technology for reading comprehension

Do I have to use the word love?

(xxxxx)

24 DE MAYO DE 2019 06:34

My experience using inference and technology for reading comprehension is that it helps a lot, and it is a good idea.

ANÓNIMO

23 DE MAYO DE 2019 15:03

1. manner Accurately, competently, satisfactorily.

23 DE MAYO DE 2019 13:55

My experience with technology because it made my works easier and very comfortable. The tools that we got provided made very easy in the moment of using infering and technology. The tools were very easy to work , and they made very much easier the reading comprehension.

ANÓNIMO

23 DE MAYO DE 2019 13:53

My experience using inference and technology for reading comprehension was very useful because, this tool help me very much to access and understand easily.

ANÓNIMO

23 DE MAYO DE 2019 13:55

I think that my experience with the tools (xxxx)gave me, helped me a lot to be able to write better, and understand the words better

ANÓNIMO

23 DE MAYO DE 2019 13:53

My experience using technology to improve reading comprehension was pero good. With the new tools I could understand and infer texts or stories in a faster, more organized and easier way.

ANÓNIMO

23 DE MAYO DE 2019 13:53

My experience using this tools was very good because I could learn new tools for impoving reading, spelling and more.

ANÓNIMO

23 DE MAYO DE 2019 13:56

My experience has been really useful and interesting. I have get to know many different tools that help me a lot with my understanding and learning process. Plus, I have ised in in many asigments, and not only english. Like for example, EasyBib for referencing in different formats and different types of sources of information. Plus, it has helped me improve in lots of aspects, something I value a lot.

ANÓNIMO

23 DE MAYO DE 2019 13:48

My experience was very nice. I think this tools help me a lot for improving reading comprehension. Great job and good Idea.

ANÓNIMO

23 DE MAYO DE 2019 10:54

Technology was very useful to me because I was able to recover the cambridge. I got better

ANÓNIMO

23 DE MAYO DE 2019 10:50

I think my esperience has been good and the outcomes have been useful

ANÓNIMO

23 DE MAYO DE 2019 10:51

My experience with reading comprehension with our new tools was, much better than last years. Although I need to improve a lot through exercises.

ANÓNIMO

27 DE MAYO DE 2019 22:35

My experience using technology and inference for reading has been important for me, because it has allowed me to work more autonomously an has improved my reading comprehension as well, because it gives me more tools to do a better work. It also allows me to understand better the texts and ideas, no matter how they are written. Reading comprehension allows me to read profoundly and get the meaning and these tools help me to do it correctly and easily.

ANÓNIMO

23 DE MAYO DE 2019 10:51

My experience with inference and tecnology for reading comprehension has been very useful for improving the way I interpret the reading before and how I do it nowv

ANÓNIMO

23 DE MAYO DE 2019 10:51

My experience with this tecnology was good because it help me to understand better

ANÓNIMO

23 DE MAYO DE 2019 10:49

I think that using the inference and the technology for the reading comprehension was good because it helped us infer faster the information needed to understand the text.

24 DE MAYO DE 2019 13:45

My experience with reading comprehension, has being easier since we started using technological tools to support our reading process. One of them, is the one of the definitions. This help me to don't be stuck when I find a word that I don't understand.

ANÓNIMO

23 DE MAYO DE 2019 10:49

I think that technology is very good for reading comprehension because with tools like EasyBib are very good and is easier for making inferences.

ANÓNIMO

23 DE MAYO DE 2019 10:55

It was very good because that is new tool very useful for learning more and help to improve more.

ANÓNIMO

23 DE MAYO DE 2019 10:48

I think that my reading comprehension is better, but still not so good. I think that I can analyze better texts, but still have some trouble because I have to read the text minimum 4 times to get a good analysis.

Appendix O: Google Classroom screenshot

Archived URL: https://classroom.google.com/u/2/c/MTg2NTU3ODkyNjNa

The URL can only be accessed with a school account.

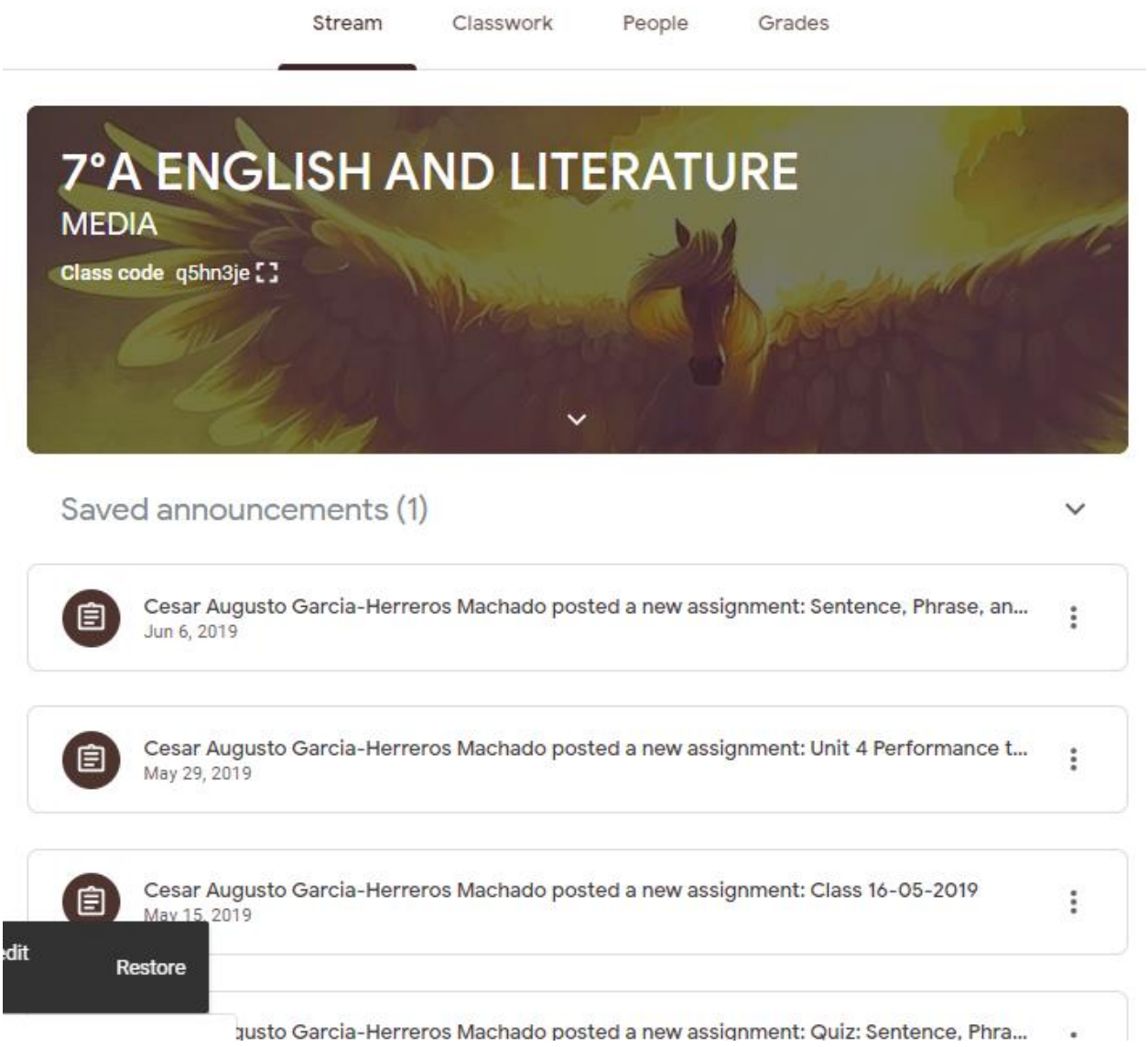

Figure 7 Google Classroom Layout

Appendix P: Sample Embedded Dictionary

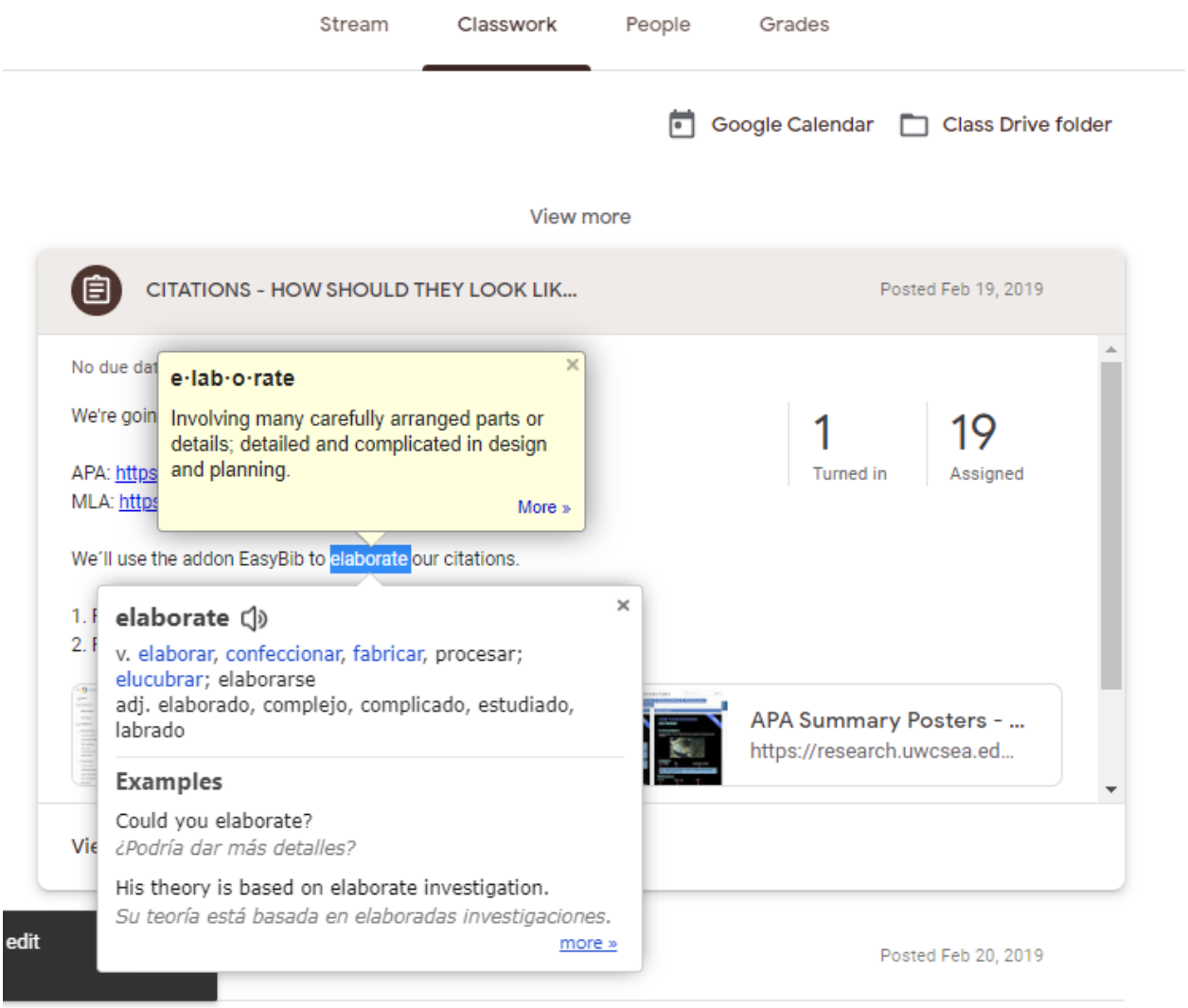

Figure 8 Embedded Dictionary Sample

Appendix Q: Rewordify Sample

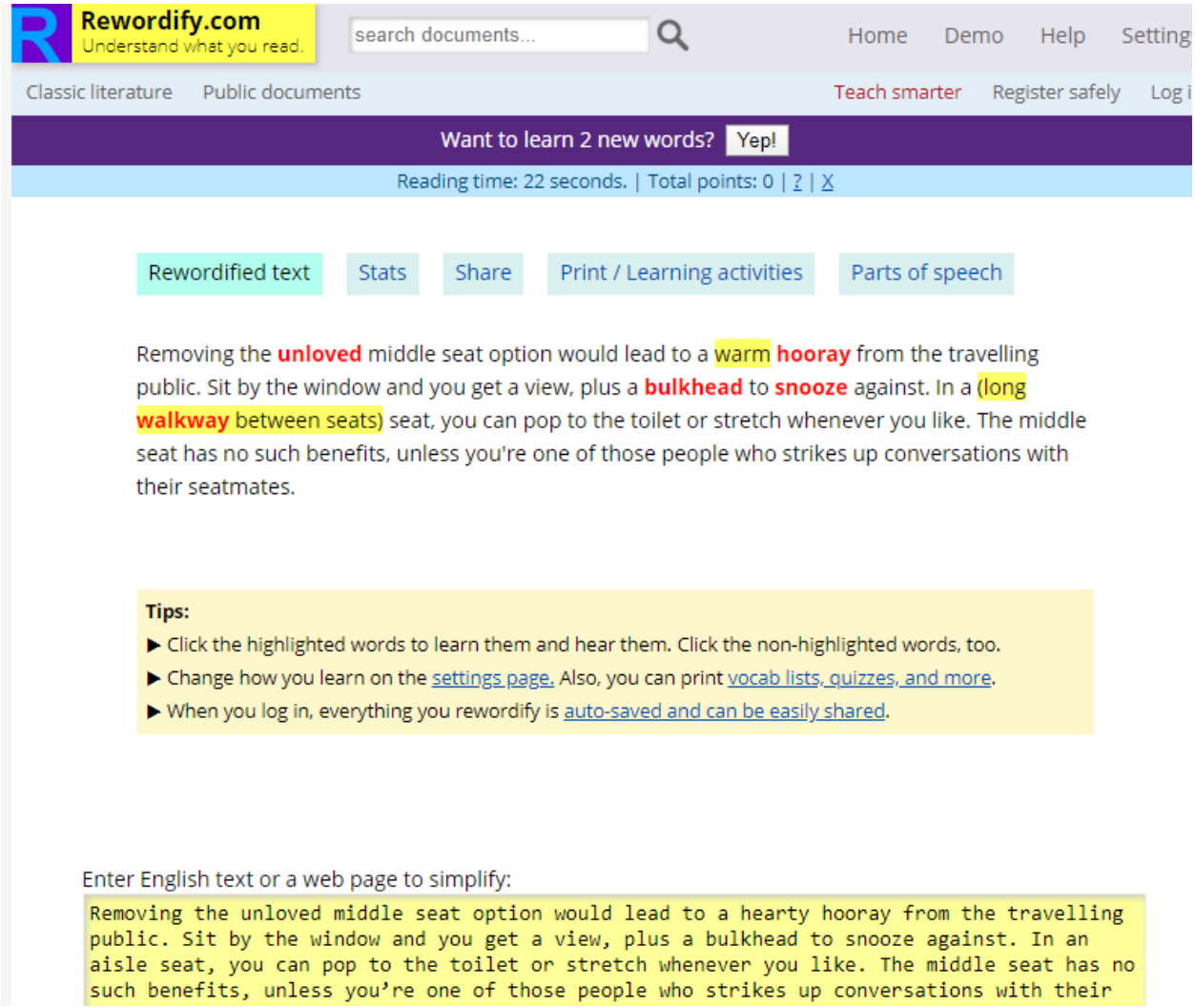

Figure 9 Rewordify Sample