

**Analysis of the academic effectiveness of a commercial online learning platform
aimed at reading comprehension in a second language.**

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Abstract

This study analyzes the academic effectiveness of an LMS platform called Elpost.education, and it is the main objective of the following quasi-experimental research. The expected outcome will be focused on knowing if the platform makes a difference compared with gnu resources, when improving reading comprehension in English. This research project will be conducted with a qualitative method, in which the instruments to collect information will be diagnostic tests, final tests, didactic units and questionnaires. Finally, it is expected that through the analysis of the information gathered, decisions can be made to improve the educational management process in a bilingual learning context in an educational institution.

Key words:

Platforms, LMS, reading skills, bilingual education, school management, gnu resources.

Resumen

Este estudio analiza la efectividad académica de una plataforma LMS llamada Elpost.education, y es el objetivo principal de la siguiente investigación cuasiexperimental. El resultado esperado estará centrado en saber si la plataforma marca la diferencia frente a los recursos gnu, a la hora de mejorar la comprensión lectora en inglés. Este proyecto de investigación se realizará con un método cualitativo, en el cual los instrumentos para recolectar información serán pruebas diagnósticas, pruebas finales, unidades didácticas y cuestionarios. Finalmente, se espera que a través del análisis de la información recopilada se puedan tomar decisiones para mejorar el proceso de gestión educativa en un contexto de aprendizaje bilingüe



en una institución educativa.

Palabras clave

Plataformas, LMS, habilidades de lectura, educación bilingüe, gestión educativa, recursos educativos gratuitos.

INTRODUCTION

Education has changed throughout the years, and it has evolved to respond to the challenges of the new generations and contexts. Nowadays, after living the effects of the COVID-19 pandemic, education is not the same as it was two or three years ago. Although it brought hopelessness to the world, it really pushed governments, school directors and policy makers to add resources, tools and methodologies that were not new, but almost impossible to use in some Latin American contexts, which was positive for teachers and students in the development and use of technology and online learning to improve bilingual skills.

Additionally, as schools and universities started to invest specifically in educational software and learning platforms, language teaching and learning has passed from traditional learning environments to hybrid or online spaces. Regarding this, Nguyen (2015) says the traditional “brick and mortar” classroom has lost domination as the only place to learn. It is pertinent, since the internet has brought changes to different fields, including education, and each day more students are moving to online or hybrid learning.

With this change and movement into online learning, it has become of interest, as Nielson & González-Lloret (2010) says, to research what works and what does not in online learning and teaching. This interest is what has generated the necessity of analyzing the experience of an LMS platform (elpost.education) used in the school Comfatolima Ana Julia Suarez de Sorroza in Ibagué, Tolima. This platform is aimed to improve the students’ reading skill in English. Although this school started to use elpost.education platform before the pandemic, its academic effectiveness has not been analyzed, and therefore it is the main objective of this research

project.

Likewise, with the use of this platform, many issues and questions have arisen in the school community regarding the implementation of those commercial platforms and their effectiveness, since some of them had not been widely used in teaching and learning contexts in Colombia and their learning results may not be clear for the school communities. Therefore, this research project is focused on answering the following questions: (a) **How to determine the academic effectiveness of commercial platforms vs GNU resources in the development of the reading comprehension skill in a second language?** It is significant to analyze the academic effectiveness of Elpost.education platform and the effects on the students' reading skill, for the school to make decisions about whether to invest or not in learning platforms.

On the other hand, it is also a challenge for students and teachers to use educational platforms in the classroom or at home, more specifically for learning reading skills in a second language, since it is not something usual in Colombian contexts, as in most of the cases they have limited technological resources. Currently, more people and students have access to smartphones and the internet, which is also a positive benefit for education purposes after the pandemic.

Considering the previous idea, for Larson-Guenette (2013) language learners commonly use internet or web-based technologies for three main purposes: to expand their knowledge, improve their accuracy and consult language course management websites. As it is evident, students nowadays recognize the importance of using virtual or online resources in their learning process, and it is interesting to study how they use them and the results those resources provide.

With the intention of comprehending the results of the mentioned LMS platform on the students' reading skill from the school Comfatolima, it is necessary to systematize the



students learning experience, to know more about their learning process when learning a second language, more specifically in the development of a major skill as reading comprehension. This research project is significant to analyze if the Elpost.education platform has helped students to improve their reading comprehension skills and identify the effectiveness of commercial platforms vs GNU resources on bilingual learners and the need of improving education management through the analysis of the implementation of resources.

LITERATURE REVIEW

New society changes, and even a pandemic, are affecting the way in which education in general and bilingual education is viewed, and the time in which learning and teaching processes were seen as a unilateral and in person process is already finished. In addition, education in the XXI century means the integration of a holistic view, with new technological, academic, didactic and pedagogical resources, and such integration should be executed and overseen by principals, managers and leaders to create different methods to approach education in this changing society.

Therefore, education and bilingual education demand a different educational management perspective that empowers institutions to include software and platforms that make learning easier and meaningful for learners. Thus, the study of virtual learning environments and their academic effectiveness and the analysis of educational management in bilingual education is the core of this research.

Likewise, bilingual education has had to transform and change its policies, strategies, resources and methods to succeed in the achievement of a bilingualism that responds to the needs of each context. Furthermore, it is important to think about how bilingual education is perceived in educational fields, how it is being executed in schools and what are the technological resources and software that are being implemented, which requires a monitoring process by principals and school communities.

According to the institution in which this research will be carried out, English is perceived as a regular subject with the regulative hours approved by the National Education

Ministry. However, the school has applied strategies and learning tools to improve the interaction of the students with English language, using different resources like a platform (LMS) to improve English reading comprehension. With the implementation of these resources, there has been a need in the academic world to research if these LMS platforms are academically effective in the students' learning process, and many authors have contributed to analyze the learning results of these LMS platforms.

LMS Platforms in Education

Among the main research articles, there are some authors that have analyzed some LMS platforms, and it is key for this research to review this theoretical background. For instance, Cruz et al. (2020) developed a critical analysis of virtual learning environments, in which they analyze the most used virtual learning platforms, such as Canva, Desire2learn, Moodle, Blackboard, finding differences in support, lack of chat box and functions, payment, among others. At the same time, they mention the importance of the teachers' digital competences to use those technological tools in their teaching exercise. It is concluded that Canvas, Sakai and Desire2learn are the most complete and then, Moodle y Blackboard are just behind in some functions. Finally, according to Roschelle et al. (as cited in Cruz et al.,2020) there are 4 principles for students to create a balance between technology and learning: group interaction, active commitment, interaction among stakeholders and, synchronous and asynchronous feedback. These characteristics are important when implementing LMS platforms.

Similarly, Rodriguez and Vargas (2020) developed a research article to analyze the

implementation and use of a LMS platform called Schoology in the development of English writing skill in elementary students. In this study, the authors analyzed factors related to the platform such as ease of use, self-efficacy and system usage through questionnaires, a focal group and written tasks. The study revealed that students found the LMS platform funny and interesting, and it improved their attitude towards learning. Also, they used it as an extracurricular activity, and it was observed that they increased their writing skills in English.

According to the research in Developing pre-service teachers' digital communication and competences through service learning for bilingual literacy, the explanation about the importance of platforms is crucial to accomplish the goals in current society coinciding with Lubosky (2020), who expresses the following “the advent of multiple digital resources, together with the development of educational platforms and the widespread implementation of online also led to significant changes in the ways content is presented and learned (p.57) highlighting the benefits from platforms in current education, and how LMS platforms could be an excellent option to reduce the lack of knowledge in a second language, making the student learning process quicker and easier.

Importance of LMS and Information and Communication Technologies in Learning and Teaching Processes

Another critical position proposed in Diseños de Aprendizaje Basados en las TIC (Moodle 2.0 y Mahara) para Contenidos de Anatomía, Fisiología y Salud en las Clases de Educación Física Escolar, gave an explanation about the benefits or the positive aspects about platforms for teaching, according to Rodríguez (2010) “la integración de las TIC en modelos formativos no adecuados no solo no mejora el aprendizaje, sino que lo empeora, incrementando la carga a profesorado y estudiantes” (p.375) this could be a negative aspect.

when institutions and teachers are not prepared for using technology and platforms in a correct way. On the other hand, some authors argue that

La utilización de las TIC en la educación a distancia y en el apoyo on-line a la educación presencial está creciendo notablemente. De ahí, que gran parte de los recursos utilizados sean la plataforma Moodle 2.0 y Mahara, por su interés y funcionalidad. (granero & Baena, 2015, page 376)

A clear idea that promotes and shows benefits about the use of platforms for teaching. Likewise, the use of those platforms in education supposed a great advance in education in all levels, according to Arevalo, Garcia and Hernandez the implementations of TIC'S in this case platforms supposed a great motivation for students

Las TIC, en efecto, tienen el potencial de permitir el diseño de distintos escenarios de interacción, en experiencias significativas de ambientes de aprendizaje diversos. Cuando tales ambientes se han delineado con una intención clara y bien definida pueden resultar especialmente estimulantes en los procesos de aprendizaje (Arevalo, Garcia and Hernandez, 2019, page 137)

related to the previous concept, education and bilingual processes should be supported on technological aspects that improve English teaching and learning.

On the other hand, for this study it is necessary to analyze some important aspects related to bilingual education and what are the most appropriate ways to implement strategies to improve bilingual learning in students. According to the article Developing pre-service teachers' digital communication and competences through service learning for bilingual literacy where the explanation about some strategies for teaching bilingual aspects and the

importance to apply the correct strategies and methodologies different from traditional teaching.

In addition, in the study, a methodology is proposed that could help with the integration between technological tools and teaching processes. As stated by Ahern and Lopez, the use of a TPACK strategy.

This model highlights that the integration of content knowledge and pedagogical knowledge, in addition to the ways in which teachers assess the content in terms of its 'teachability', should be what guides them in the selection and application of technological resources.

In relationship with this model, the use of LMS platforms for teaching English supposed a great advance in English teaching, specifically in the skills that the teacher wants to strengthen. In the case of this research, the use of platforms could help in the improvement of reading skills.

Besides, it is important to analyze some concepts related to inclusive education, since it is necessary that LMS platforms could be used for many students from different socio-cultural levels, since in Colombian contexts not all the students can access to new platforms that help them articulate what are they learning in classrooms with virtual contexts.

According to Blanco:

Las desigualdades en función del origen socioeconómico son las más significativas en los países de América Latina, y la pobreza está asociada a otros tipos de desigualdad como vivir en la zona rural o pertenecer a pueblos originarios, lo cual sitúa a un buen porcentaje de la población en una posición de gran vulnerabilidad.



(Blanco, 2006, page 4)

The previous idea is a clear example about the difficulties that some students suffer in Colombian contexts, hindering the use of new strategies like the learning through LMS platforms.

However, the importance of learning through new tools is highly increasing since, the current time is completely permeated by technological advances regarding the new ways to learn. It is necessary to take into consideration that in XXI century students and educative institutions, must develop new skills and using LMS platforms could allow students to get a better proficiency in English language, it is remarkable that

The essential advantage of applying Moodle based for English language learning implies that language learners can manage multimedia instruments and applications, such as animations, photographs, and sounds. This technicality constructs an environment that enables language learners to exercise four language abilities (speaking, listening, writing, and reading). (Prasetya, 2021)

Likewise, it is important to analyze if LMS platforms really contribute with the development of schools in relation to quality education, also it is important to consider some particularities about LMS structures, a case study base on Blackboard 9.1 and Blackboard rubrics in which the outcomes were positive highlighting the benefits of those platforms. According to Alias and Zainuddin (2005) exist some benefits at the moment to apply and LMS between students and teachers, the first ones could develop a better ability to use technology, easy access to subject material and more interaction between students and the lectures, on the other hand for teachers, saving time, effective ways to evaluate students and the opportunity to



include more resources for lecturers. (p.91).

Educational Management and Technology Usage in Bilingual Education

After analyzing the incidences, issues and opportunities that technology, LMS platforms and technological tools have provided to bilingual education and education in general, it is also significant to study the influence of educational management on bilingual education. Strategic direction, decision making, and resources implementation and control have a direct impact on education and bilingual education, and it is crucial to analyze the role of educational management in the success of students and educational institutions.

One of the aspects to analyze is the perspectives and beliefs that some principals and managers have about the use of technology in bilingual classes. Babativa (2012) states that some principals and managers believe that just by using technology in a bilingual class, the learning results are guaranteed. As learning does not happen automatically just by using technology, the selection of platforms, and investment in technological resources and tools should be well-directed. Hence, there must be a monitoring process, since sometimes the use of technology in the class focuses on solving problems such as the lack of students' motivation and attention. Therefore, principals and managers should encourage in their teachers the establishment of clear objectives when using technology, and they should ensure that those technological resources really enhance the students' outcomes. All of this, to take advantage of economic resources and make the best decisions for students' learning process.

Additionally, bilingual programs around the world have many challenges and it is important that principals and leaders are prepared to face them. According to Mehisto (2012), it is necessary to consider leadership, planning, monitoring, and evaluation processes, as well



as the students, teachers and parents in the development of bilingual education programs. For this author, building successful learning environments is key in the bilingual learning process and this can be done with the appropriate cooperation between stakeholders, but the principals' leadership is crucial to manage that cooperation. Besides, Mehisto believes that difficulties in bilingual education and education in general cannot be separated, and at the same time, leading bilingual schools and programs cannot be separated from leadership and management in general. It is also expressed by the author, that bilingual learning needs extra effort by students, teachers and parents, and that is why leaders and principals need to make it as well to manage bilingual programs. Thus, principals and leaders play an important role in bilingual education and education in general, as they help articulate all the elements and actors mentioned previously, to reach the objectives and needs of the students.

With the previous analysis about the influence of educational management in bilingual education, it is also interesting to realize that, according to Reynolds and Teddlie (2000), the most effective bilingual and multilingual programs are characterized and shaped by effective leadership, positive school culture and progress monitoring, among others. These have to do with some of the most relevant school management tasks and prove that the success of bilingual education is outside the classroom as well. This is significant for the present study, as the connection between the success of bilingual programs is linked with the correct educational management characteristics, which show that it is crucial to pay more attention to this connection between educational management and bilingual education.

On the other hand, the design and implementation of bilingual courses and programs requires a special attention to the specific needs and characteristics of the context in which they will be developed. In this sense, Beardsmore (1993) explains in his research article about

the characteristics and contexts of three European models of bilingual education. In doing so, this author claims that bilingual programs and models cannot be just copied from one context to another without the necessary modifications from local context, since those models will not respond to the specific needs and expectations of those students. This is pertinent for the design, implementation and adjustment of schools' bilingual programs, curriculum and syllabus, as sometimes school directors and teachers could believe that if a model is successful in some place, it will be the same in their educational institutions, which is a big mistake.

GNU resources

The use of technological resources in education and bilingual education is popular nowadays, since after the pandemic most schools and educational institutions had to move to hybrid or online learning environments. It is known that educational LMS platforms must be paid for and that some of them are expensive, therefore some schools are not able to pay such high prices. Thus, schools and some universities have decided to use GNU resources, which are free and accessible for teachers and students.

According to Caswell et al. (2008), it was expensive to create, reproduce and distribute courses in distance education. However, although it still costs money to produce them, nowadays it is easier to reproduce them thanks to the current technological advances. Thus, universities have shared their courses and opened their spaces to make learning available for everyone. This means that students and teachers can access different types of educational materials and resources freely, at almost no cost or without any cost.

It all responded to the Open Educational Resources movement, which was influenced by the necessity of providing access to high quality education materials. The term GNU started



with Richard Stallman in 1983, as a project to build Unix-compatible software with the purpose of sharing it freely with anyone. After that, throughout the years many people and companies have followed the same intention of allowing free access to many educational resources, such as Creative Commons and many other projects.

Reading comprehension

Reading comprehension takes an important role in the process of developing proficiency in English, since it is one of the first skills that students should learn to develop a well understanding in English. According to Firdaus and Mayasari (2022), reading is an important skill in the development of knowledge, as students have the opportunity not only to enrich their knowledge but to understand other disciplines through the reading processes. For that reason, the process of the development of reading comprehension ability is linked with the analysis of the LMS and GNU resources and how those ones are useful for this purpose.

Likewise, is important to determine and measure the process of reading comprehension in the students after using the resources previously mentioned according to this, LMS platforms or GNU resources are tools that accomplish with the purpose of measure and evaluate the process of a student, in the same way it is an opportunity for the research project to evaluate the effectiveness of this kind of platforms. As Katsumata (2022) pointed out, LMS platforms can offer personalized learning experiences, including adaptive assessments that adjust question difficulty based on a student's performance. This personalization allows students to work at their own pace, receiving targeted feedback and support. Allowing the process to research the LMS platforms be connected to reading processes.

Furthermore, reading comprehension skill is link with a deep cognitive process that



permits to analyse how LMS platforms and GNU resources contribute to the development of the skill, as Mohd (2021) highlighted

Reading is essentially a cognitive activity between text and the reader, however, for an online language learner, the reading process has become a ‘social’ activity in an online learning environment. Learners may utilize online features like a forum to discuss text reading with other learners or autonomously other websites surfing to gain more information on what has been read. (p.130)

According to the previous statement, the LMS and GNU resources could help in the process of learning and develop a good reading comprehension not only with the traditional forms but with a new kind of interaction between the learner and the different web resources, which is expected to analyze in the conducted study.

The following study uses a quasi-experimental design. According to Gopalan et al (2020), quasi-experimental research designs could be understood as follows:

To understand the causal effect of any policy or intervention, researchers strive to establish an appropriate counterfactual, or what would have happened in the absence of the policy or intervention, to provide a baseline from which causal effects can be estimated. RCTs are considered the “gold standard” of causal inference because of their ability to create a valid counterfactual by withholding treatment on a random set of subjects—known as the control group. In an educational RCT, subjects—students, classrooms, teachers, schools, or districts—are assigned to treatment and control groups based purely on chance (p.219)

Additionally, the research design follows specifically a Difference-in-differences design, that according Gopalan et al (2020) is a way to explore the result of a policy or intervention that affects a group of people or students and compare the results of a treatment in a pre and post treatment comparison to make an estimate of the causal effect. The posttreatment results of those who did not receive the treatment serve as counterfactual information.

Therefore, this research project is focused on comparing the reading learning results of two groups of students, one using an LMS reading platform (experimental group) and the other which does not use it (control group). The general objective is to analyze the academic effectiveness of a commercial online learning platform aimed at reading comprehension in a second language. To achieve the previous objective, it is necessary to follow the next specific objectives: a). To characterize a commercial online learning platform oriented to reading in a



second language in the context of a private school, b. To evaluate the reading comprehension level of a sample of student users of the online learning platform oriented to reading in a second language, c. To develop a quasi-experimental study with the sample divided into two experimental and control groups, d. To compare the results of the quasi-experimental study in terms of academic effectiveness.

In favor of comparing both groups, it is necessary to follow certain steps to understand the phases of the project. First, it was necessary to characterize the LMS platform Elpost.education, to describe and identify the main resources and tools it provides to the students. Secondly, it is relevant to identify the students reading level by using a diagnostic test or pretest (Aptis test), which is administered to 64 students. The results are analyzed according to the proficiency level in the Common European Framework of Reference for Languages. Then, the two groups are separated randomly into two groups of 32, as they have similar results in the diagnostic tests. Then, two didactic units regarding literal and inferential reading were implemented with the two groups, one group using the learning platform and the other GNU resources.

Thirdly, it is important to validate the effectiveness of the didactic unit with the two groups, through the analysis and interpretation of the students' learning results at the end of each didactic unit with a short evaluative questionnaire. At the end of the questionnaire, the students were asked about their satisfaction using the LMS platform and the GNU resources. It was done through a Likert scale questionnaire with questions about the general, technical and didactic effectiveness of the LMS platform Elpost.education and the GNU resources.

Finally, the two groups take a final test or posttest, in which they put into practice what they learn in the didactic units to improve their reading skills. Then, all the information

is gathered and analyzed, with the intention of identifying the results of the platform on the students' reading comprehension skill in a second language. This is done by checking the students' learning results at the end of the didactic units and the pretest and posttest. The criteria to determine the academic effectiveness of the LMS platform are explained in the following paragraph.

Academic Effectiveness Criteria

The academic effectiveness of the LMS platform Elpost.education and the GNU resources is composed of five criteria. The first is associated with the academic performance of the students using the two resources, and it is measured by the scale of the Aptis exam, from A1 to C, that is based on the CEFR. The second is related to the students' satisfaction when using the LMS platform and the GNU resources. The third is related to general effectiveness. The fourth has to do with didactic effectiveness and the fifth with technical effectiveness. Each one will be described in the following table.

Table 1

Academic effectiveness criteria

Criteria	Description
1. Academic performance	It is based on the CEFR level bands (A, B, C), which are used in the Aptis test. Two different free versions of this test are used in the pretest and posttest. Students get a score and are placed in each level according to their results.
2. Didactic effectiveness	It is related to the didactic tools to learn, their ease to use, motivation and interaction with contents.

-
- | | |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 3. Technical effectiveness | It has to do with the technical stability of the resources, integration of multimedia elements and interface. |
| 4. General effectiveness | It is related to the time students use the learning resources and the development of autonomous learning and independence. |
| 5. Satisfaction | It is related to the students' satisfaction degree and the probability of recommending the resource to a friend. |
-

Nota. Elaboración propia.

Context and Participants

This research is developed in a private school in Ibagué, Tolima. It is in El Salado neighborhood; it is a distant place from the city downtown. The two groups belong to a medium class lifestyle, which allows them to have access to technological devices such as smartphones, computers and internet connection. The school has video beams, a computers lab and ample space. Both groups, the experimental and control groups, who are eleventh graders, were selected and grouped according to similar and homogeneous characteristics in their academic performance. The students are 15 to 18 years old and some of them have studied at the school for many years.

Data Collection Instruments

Diagnostic Test (pretest) and Final Test (posttest)

The first part of the research project is the application of a diagnostic test, an English reading comprehension test(see appendix [Instruments](#)), which is a free version of the Aptis test, administered by the British council. The students demonstrate their ability to read and



comprehend texts in the target language. The students have approximately 45 minutes to answer 25 questions. The experimental and control groups take the same test, as the objective is to diagnose the students initial reading level before the use of the educational platform and the GNU resources. The posttest is the same Aptis exam, but a different version and it was applied after the application of the two didactic units, approximately two months after the pretest.

Didactic Units and an Evaluative Questionnaire

The researchers used two didactic units for the experimental group, in which the students use the Elpost.education platform, in order to improve their reading comprehension skills. The control group uses a similar didactic unit (see appendix [Instruments](#)),, without the use of the platform, instead they use GNU resources, such as the British council website, BBC learning, Cambridge, among others. The objective of using the didactic unit is to compare the two groups and analyze the results of the platform on the students' learning outcomes when reading in a second language. The implementation of the two units and the evaluative questionnaire took two months. The students took the questionnaire at the end of the implementation of the two didactic units to evaluate what students learned.

Satisfaction Questionnaire

The researchers used a questionnaire with 12 questions related to general, technical, didactic effectiveness and satisfaction (see appendix [Instruments](#)),. The questionnaire used a Likert scale, which had 5 levels from 1 to 5. 1 represents totally disagree, 2 disagree, 3 Neither disagree nor agree, 4 agree and 5 totally agree. The 12 questions asked were about the students' satisfaction with the LMS platform Elpost.education and GNU resources.

In the following analysis, the results obtained with the application of a diagnostic test (pretest), two didactic units and an evaluative questionnaire, a Likert scale questionnaire and a posttest will be presented to determine the academic effectiveness of an LMS platform called elpost.education oriented to the reading comprehension of a second language, as it is the general objective of the project. The research used a quasi-experimental design, in which two groups, experimental and control, took the instruments mentioned in the method section. The length of time to administer the tests and didactic units was approximately 6 months. The time to analyze the information gathered was approximately 2 months by the two researchers of the project. One of the researchers had a direct participant role, since it is one of the English teachers in the school.

Regarding the data analysis process and procedures, there are four phases. The first is the diagnostic phase, in which a diagnostic test is administered to eleventh graders, in the experimental and control groups, in the school where the research is developed. The results gathered in the pretest or diagnostic test (Aptis test), were organized and analyzed based on the levels in the Common European Framework of Reference for languages (CEFR). The results were divided into two groups, experimental and control, according to the three bands in the Aptis test, A1 and A2, B1 and B2, and C. The three bands are the categories to analyze the academic performance of the students.

The second phase is the first evaluative moment and students answered a questionnaire with 20 questions related to the literal and inferential reading levels, which were the topics of the didactic units aimed at improving their reading skills in English. After answering the questions, students answered a 12 question Likert scale survey about their satisfaction of

Elpost.education platform and gnu resources. The questions in the survey gathered information about the technical, didactic and general effectiveness of the LMS platform and the gnu resources, and the students' satisfaction.

The third phase is the second evaluative moment, and it was supported by the posttest that was administered to the two groups, experimental and control. The test is the Aptis test, a different free version. Finally, the fourth phase is the data analysis and results.

To do the data analysis it was necessary to follow a triangulation method, since different data collection instruments and sources were used in the research process. Vallejo and Franco (2009) state that:

Por otra parte, la incorporación de la triangulación como técnica de análisis permitirá utilizar distintos puntos de vista garantizando mayor precisión en la observación, incrementando la validez de los resultados al obtener datos de diferentes fuentes ofreciendo de esta manera la complementariedad requerida para este tipo de estudio. (p. 120)

Additionally, Perez (2000) affirms:

La triangulación implica reunir una variedad de datos y métodos referidos al mismo tema o problema. Implica también que los datos se recojan desde puntos de vista distintos y efectuando comparaciones múltiples de un fenómeno único, de un grupo, y en varios momentos, utilizando perspectivas diversas y múltiples procedimientos. (as cited in Vallejo and Franco, 2009).

According to the same authors, Vallejo and Franco (2009) explain that through the cross examination of information, data can be found and contrasted, and new or other data can be obtained, which was probably not found at a first reading stage. Also, they explained the

approach that will be used in this data analysis, that is the data triangulation over time, which consists in analyzing a theory or phenomenon, in different periods of time. Pérez (as cited in Vallejo and Franco, 2009) claims:

Que en este tipo de triangulación intenta considerar el factor de cambio y el de proceso mediante la utilización de diseño de cortes a través de seccion mediante diseños longitudinales para analizar tendencias a lo largo del tiempo. Recoge información contrastada de los diferentes momentos, utilizando el antes en el que se sitúa la iniciativa y el diseño del mismo, el durante en el que se escalonan temporalmente diferentes fases de la acción y el después en el que se producen algunos efectos y las repercusiones producidas en los sujetos y en los ambientes. (p. 122).

According to the previous excerpt, the data triangulation over time focuses on considering longitudinal designs, to analyze tendencies in time. It pays attention to the stages before or at the beginning of the initiative, during the implementation of the design, and the after stage, in which some effects and results are produced on the subjects and settings. It is crucial to develop the data analysis and fulfill the research objective, since it is necessary to analyze the information gathered in different periods of time, with the pretest, questionnaire and survey and posttest, following the quasi-experimental design with an experimental and control group, to analyze the academic effectiveness of the LMS platform Elpost.education.

Diagnostic Test Analysis

Experimental Group

The diagnostic test was carried out in physical tests in 32 participants, where the students must answer 25 questions related to reading comprehension. This test evaluated the students' capacities to understand and comprehend a reading text: Also, the test is divided into 5 levels of proficiency A1, A2, B1, B2 and the level C, all those levels are aligned with the CEFR, the experimental group showed the following results:

Table 2

Levels of proficiency

Level of proficiency	Percentage of students
A1-A2	62,5%
B1	34,3%
B2	3.2%
C	0%

Nota. Elaboración propia.

According with these results, most of the students are placed in a basic level (A, basic user) of proficiency with the 72%, therefore, it demonstrates that most students in the experimental group have a low level of reading comprehension and that they only Can understand very short, simple texts a single phrase at a time, picking up familiar names, words and basic phrases and rereading as required.

Second, 22% of the students are placed in the level B1 which demonstrates that some students have a low intermediate level regarding to reading comprehension since, they can read

straightforward factual texts on subjects related to his/her field and interest with a satisfactory level of comprehension. Finally, only 3.1% of the students reached a B2 level which corresponds to an intermediate level of reading comprehension, it shows that just a really few students can read with a large degree of independence, adapting style and speed of reading to different texts and purposes, and using appropriate reference sources selectively.

Control Group

In the control group showed the following results after the application of the diagnostic test:

Table 3

Levels of proficiency

Level of proficiency	Percentage of students
A1-A2	72%
B1	22%
B2	6%
C	0%

Nota. Elaboración propia.

According with these results, most of the students are placed in a basic level of proficiency therefore, it demonstrates that most students in the control group have a low level of reading comprehension with the 72% and they only can understand very short, simple texts a single phrase at a time, picking up familiar names, words and basic phrases and rereading as required.

Second, 22% of the students are placed in the level B1 which demonstrates that some

students have a low intermediate level regarding to reading comprehension since, they Can read straightforward factual texts on subjects related to his/her field and interest with a satisfactory level of comprehension. Finally, only 6% of the students reached a B2 level which corresponds to an intermediate level of reading comprehension, it shows that just a really few students can read with a large degree of independence, adapting style and speed of reading to different texts and purposes, and using appropriate reference sources selectively.

Literal And Inferential Questionnaire and Likert Scale Survey Analysis

In the evaluative phase the students presented a test in which they demonstrate the knowledge acquired after the application of didactics units that pretended to foster reading abilities in the students after using the LMS platform Elpost.education. And GNU resources Also, the students presented a survey in which they answered questions about didactic quality, technical efficiency, general quality and users' satisfaction regarding Elpost.education platform and the GNU resources. The results obtained after the test and survey applied showed the following results.

Experimental Group

Table 4

Reading comprehension

READING COMPRENHENSION LEVEL	PERCENTAGE
Literal reading	82.61%
Inferential reading	61.08%

Nota. Elaboración propia.

According to the results can be inferred that for students in the experimental group is

easier to answer the questions in which the answers could be located directly in the text and don't need a different process for finding the information however, the 17.39% of the remaining students faced some problems at the moment to answer the questions in a correct way. On the other hand, students presented more difficulties for answering the questions in which they must use inferential skills for looking the answers this may be due that inferential reading is a more complex than the literal reading abilities and students need to be more skilled in English for that reason 61.08% of the students reached the whole of the questions correct and the 38.92% of the students' presented troubles with some of the inferential questions.

Likert scale survey

Next, the results obtained in the survey about the characteristics of the platform in which was used the Likert scale where 1 was completely disagree, 2 disagree, 3 neither agree nor disagree, 4 agree and 5 completely agree showed the following information:

Table 5

Didactic criteria

Didactic criteria	scale
14,3%	5
51,2%	4
27,4%	3
6,0%	2
1,2%	1

Nota. Elaboración propia.

According to the previous chart 14.3% completely agree that Elpost.education platform provides dynamic resources that allow them to learn better and feel motivated using the platform for improving their reading skills. Then 51,2% of the students agree in which the platform are useful tool for improving their reading skills with all the resources that the platform offer to them, 27,4% of the students have a neutral attitude regarding to the didactic quality of the platform, in the penultimate item of the survey 6% of the students are not agree in which the platform have dynamic resources, that motivate them to develop their reading comprehension and that the platform doesn't have relation with English topics. Finally, 1,2% of the students totally disagree with the didactic quality of the platform since they consider that resources, topics and mechanism to develop interest to Learn English reading comprehension is not accurate in Elpost.education platform.

Table 6

Technical criteria

Technical criteria	scale
	5
	4
	3
	2
	1

For the second group of questions related to the technical efficiency of the platform, questions involve aspects like the stability of the platform when they are working on them also,

the easiness to interact with all the content in the platform and finally evaluate if the LMS platform helps in the development of autonomy and independence in the learning process.

According to this, 13.1% of the students totally agree that the platform provides all the tools and is friendly to the user and the media resources that they can find on the platform. 46.4% of the students agree that the platform provides excellent tools that involve didactic efficiency, then 28.6% of the students answer that they neither disagree nor agree, 8.3% said that the platform doesn't accomplish with the basic tools of an LMS platform, finally only 3.6% of the students disagree completely with the technical efficiency of the platform.

Table 7

General quality criteria

General quality	
criteria	scale
11,9	!
46,4	!
33,3	:
6,0	:
2,4	:

Nota. Elaboración propia.

According to the general quality that the LMS platform offers to the learning processes in English, the experimental group answer in the following ways: 11.9% of the students totally agree that the LMS platform is easy to use and is possible to use all the material that offer, also they agree that the platform motivated them to stay spent more time using the platform, 46.4% of

the students agree that platform accomplish with the previous characteristics, then 33.3% of the student neither agree nor disagree with the LMS platform on the other hand 6,0% of the students disagree in which the platform offer to them all the characteristics regarding to general quality. Finally, 2,4% of the students totally disagree in which platform can offer a good quality in general terms.

Table 8

User's satisfaction

Users' satisfaction	scale
13,1	5
47,6	4
31,0	3
4,8	2
3,6	1

Nota. Elaboración propia.

Finally, the students were asked about the level of satisfaction with the LMS platform to which the students answered: 13.1% of the students feel totally satisfied with Elpost.education platform, 47.6% of the students agree that the is useful for learning English reading comprehension, 31.0% of the students were neither agree nor disagree, 4.8% of the students were unsatisfied with the platform and finally 3.6% of the students totally disagree with the use of the LMS platform Elpost.education since they believe that the platform is not a great contribution to their comprehension reading ability knowledge.



Control Group

According to the test applied about the reading comprehension levels the control group showed the following results:

Table 9

Reading comprehension level

READING COMPRENHENSION LEVEL	PERCENTAGE
Literal reading	82.41%
Inferential reading	69.4%

Nota. Elaboración propia.

In the control group most of the students answered the questions from literal reading in a correct way which demonstrate that students have a good understanding when the answers are explicit in the readings that is why 82.41% obtained a perfect score at the moment to answer the questions however, 17.59% of the students had troubles at the moment to answer the questions in the literal reading test. On the other hand, 69.4% of the students answered correctly the questions about inferential reading, it means that more of the half of the students could understand and analyze the information that they found in a reading using their inferential abilities but, 30.6% of the students presented some problems to answer the questions because it represents a harder process at the moment to analyze and comprehend the information in a test.

Likert scale Survey

Next, the results obtained in the survey about the characteristics of the GNU resources in which was used the Likert scale where 1 was completely disagree, 2 disagree, 3 neither agree nor disagree, 4 agree and 5 completely agree showed the following information:



Table 10

Didactic criteria

Didactic criteria	satisfaction
0%	5
48.5%	4
43.4%	3
7.1%	2
2%	1

Nota. Elaboración propia.

Regarding the didactic quality of GNU resources, when students are asked if GNU resources have enough didactic tools to learn, are easy to learn and use, keep them motivated, and allow them to interact with different English contents, the 48,5% of the students agree with the statement, while the 43,4% neither agree nor disagree, the 7,1% totally disagree and the 1% disagree.

Table 11

Technical effectiveness

Technical effectiveness	satisfaction
2%	5
36.4%	4



53.5%	3
4%	2
4%	1

Nota. Elaboración propia.

Regarding the technical aspects of GNU resources, when students are asked if GNU resources provide stability, integration of multimedia elements and ease interface, 53,5% of the students neither disagree nor agree about the statement, followed by a 36,4% of students who agree that those resources are stable and allow easy use. 4% of students totally disagree and another 4% disagree, and 2% totally agree with the statement. It shows a neutral opinion regarding the technical aspects of GNU resources.

Table 12

Didactic criteria

Didactic effectiveness	satisfaction
14,3%	5
51,2%	4
27,4%	3
6,0%	2
1,2%	1

Nota. Elaboración propia.

Regarding the time they use the GNU resources and the development of autonomous

learning and independence, 49,5% of the students have a neutral opinion about the statement, since they neither disagree nor agree, however it is followed by a 38,4% of students who agree that GNU resources help them improve their autonomous learning and independence when learning English. 10,1% of students totally disagree and 2% totally agree with the statement.

Table 13

Users' satisfaction

Users' satisfaction	satisfactio n
14,3%	5
51,2%	4
27,4%	3
6,0%	2
1,2%	1

Nota. Elaboración propia.

Finally, when students are asked if they are satisfied with the use of GNU resources or would recommend them, 52,5% neither agree nor disagree and 32,3% agree that they are satisfied, and they would recommend the use of GNU resources to a friend. 6,1% of students totally disagree and 9,1% totally agree with the statement.

POST TEST ANALYSIS

For the final part of the data collection both the control and experimental group took a post test that evaluated and measured the level of proficiency regarding to reading

comprehension, the posttest that was applied to the students was APTIS the same that was applied in the diagnostic test but, with a different set of questions, as in the diagnostic test the posttest evaluated the same levels A1, A2, B1, B2 and C.

Experimental Group:

Table 13

Levels of proficiency

Level of proficiency	Percentage of students
A1-A2	53.12%
B1	46.88%
B2	0%
C	0%

Nota. Elaboración propia.

According to the table, there are 18.75% (6) of the students and in the level A2 there are 34.37% (11) of the students, conforming 53.12% of the students in this level, with those results we can see that more of the half of the students are placed in a basic level, whereby the students placed in A1 are not allowed to understand and comprehend readings in English and the students placed in A2 are capable of understand very short, simple texts a single phrase at a time, picking up familiar names, words and basic phrases and rereading as required. And in level B1 46.88% of the students could reach a low intermediate level, allowing them to read straightforward factual texts on subjects related to his/her field and interest with a satisfactory level of comprehension.

Finally, in the levels intermediate and advance none of the students could reach those

levels, which demonstrate that even with the application of the didactics units, the students didn't develop the necessary skills to at least have the capability to read with a large degree of independence, adapting style and speed of reading to different texts and purposes, and using appropriate reference sources selectively.

Control Group

Table 14

Levels of proficiency

Level of proficiency	Percentage of students
A1-A2	68.67%
B1	28.12%
B2	3.21%
C	0%

Nota. Elaboración propia.

According to the previous results, we can see that more than half of the students are placed in a basic level, whereby the students placed in A1 are not allowed to understand and comprehend readings in English and the students placed in A2 are capable of understand very short, simple texts a single phrase at a time, picking up familiar names, words and basic phrases and rereading as required.

In the level B1 there are 28.12% and only 3.21% (1) of the students placed in the level B2, according to the results the students placed in the level B1 can read straightforward factual texts on subjects related to his/her field and interest with a satisfactory level of comprehension. And the students placed in the level B2 Can read with a large degree of independence, adapting style and speed of reading

to different texts and purposes, and using appropriate reference sources selectively. Finally, none of the students could reach level C that represents an advanced level because they don't have the ability to understand and interpret critically all forms of the written language.

Cross Tabulation Matrix

In the present quasi-experimental study, it is important to compare the different categories of analysis and determine if any of both groups had an improvement in their reading skills according to the use of the LMS platform Elpost.education or the GNU resources. For this reason, through a cross analysis matrix, similarities and differences can be compared between experimental and control group. Afterwards, the cross analysis will have in consideration the following categories: level of proficiency according to CEFR, reading comprehension level and LMS platform vs GNU resources.

Table 15

Levels of proficiency (CEFR):

LEVELS OF PROFICIENCY	CONTROL GROUP		EXPERIMENTAL GROUP	
	PRE-TEST	POST TEST	PRE- TEST	POST-TEST
A1-A2	72%	68.67%	62.5%	53.12%
B1	22%	28.12%	34.3%	46.88%
B2	6%	3.21%	3.2%	0%
C	0%	0%	0%	0%

Nota. Elaboración propia.

According to the previous chart in which is condensed the information about the proficiency level according to the CEFR in the pre-test and post-test applied to both group it can be appreciated that both groups had most of students between the levels A1 and A2 and the tendency continued until the end of the research exercise since in the results obtained in the post-test the control group obtained 68.67% of the students in this level and the experimental group the 53.12%, it can be inferred that the experimental group had a better results since less students are placed in those levels.

Next, in the level B1 could be appreciated that in the pre-test the control group had better results in the pre-test with 34.3% of the students versus 22% of the students in this level however, the results in the post-test showed that the tendency change and the group with better results was the experimental group with 46.88% of the students in the level B1 it demonstrated that the experimental group had an improvement in their level according to the CEFR.

Finally, in the level B2 at the beginning both groups had 3.1% of the students in this level and after the post-test the results showed that in the control group the percentage of students in this level kept in the same way however, in the experimental group decreased in the percentage of students in the level B2 furthermore, in the level C in both groups the tendency was the same for the pre-test and pos-test since none of the groups had students in this level.

Reading comprehension levels:

Table 16

Literal reading

READING	CONTROL GROUP	EXPERIMENTAL GROUP
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COMPREHENSION

LEVELS

literal	82.61%	82.41%
Inferential	61.08%	69.4%

Nota. Elaboración propia.

According to the results obtained it is important to highlight that both groups have similar developments in the presentation of the reading Literal test with some differences that are important to mention. In the first part it is important to mention that both groups are similar in relation to the percentage of students who answered the ten questions in a correct way with a difference of 0,2%, which lets us see clearly that both groups are at the same level at the moment to read text in which the answers could be found literally inside the text. On the other hand, regarding to the inferential reading, the experimental group showed a better performance, can be observed that between the group there is a difference of 8.32% in the experimental group, it means that in the experimental group the students showed more skills to analyze the text and find the implicit information.

LMS Platform Vs Gnu Resources

The analysis for the LMS platform and the gnu resources was divided into four key aspects, the first of the aspect that was evaluated is regarding to the didactic criteria, and how students perceived the quality of the tools and the versatility of those, also if the platform or the gnu resources motivate students to improve their knowledge.

Table 17

Didactic criteria

	CONTROL GROUP	EXPERIMENTAL GROUP
5-totally agree	0%	14,3%
4- agree	48.5%	51,2%
3-neither agree nor disagree	43.4%	27,4%
2-disagree	7.1%	6,0%
1-totally disagree	2%	1,2%

Nota. Elaboración propia.

According to the table, some students from the experimental group totally agree in which the platform offers a good quality regarding the didactic criteria while in the control group none of the students totally agree. On the other hand, both groups agreeing that the platform and the gnu resources offer appropriate tools and motivate them to continue learning from the platform or the gnu resource, in the third place it could be found that the control group had a more neutral position related to the didactic criteria of the gnu resources while in the experimental group the group of students with a neutral position was much lower that the expressed in the control group. Finally, the number of students disagree or totally disagree was low since none of the groups reach at least ten percent of the students disagree.

Technical criteria:

The technical aspects that were analyzed in the survey applied to the students corresponds to the stability and functionality of the platform or the gnu resource also, it was evaluated the multimedia resources, navigability and the interface in the platform and the gnu resources in the following chart the results obtained in both groups will be compared.

Table 18*Technical criteria*

	CONTROL GROUP	EXPERIMENTAL GROUP
5-totally agree	2%	13,1%
4- agree	36.4%	46,4%
3-neither agree nor disagree	53.5%	28,6%
2-disagree	4%	8,3%
1-totally disagree	4%	3,6%

Nota. Elaboración propia.

According to the chart, the experimental group consider that the platform has better technical aspects than the gnu resources since, experimental group the 13,1% totally agree with the technical aspects that the platform offers and the control group just 2% of the students totally agree with the technical aspects of the gnu resources. On the other hand, a great part of both groups agree that the platform and the gnu resources offer good aspects of technical criteria. In the control group it could be appreciated that most of the students had a neutral position against the technical aspects since 53,5% of the students considered that the gnu resources don't have a great impact according to the navigability. Finally, both groups showed low percentages in disagree and totally disagree items, which demonstrate that for the control group the technical aspects of the gnu resources don't have a great impact and for the experimental group most of the students agree in the well-developed that the technical aspects are.

General Criteria:

In both groups general quality was analyzed it took in consideration the value of the course offers in the platform and gnu resources also, the efficiency and versatility and finally the tools that they use to foster autonomous learning, groups showed the following results.

Table 19

General effectiveness

	CONTROL GROUP	EXPERIMENTAL GROUP
5-totally agree	14,3%	11,9%
4- agree	51,2%	46,4%
3-neither agree nor disagree	27,4%	33,3%
2-disagree	6,0%	6,0%
1-totally disagree	1,2%	2,4%

Nota. Elaboración propia.

According to the chart both groups have similarities in the five items that were evaluated, most of the students agree that the platform and gnu resources used for teaching in terms of general quality accomplished with the previously mentioned qualities. Furthermore, in the last two items both groups have similar opinions about the general quality of the platform and the gnu resources.

Users' Satisfaction:

The final item evaluated was the satisfaction that the students showed against the LMS platform or the gnu resources, the students showed the following results



Table 20

Users' satisfaction

	CONTROL GROUP	EXPERIMENTAL GROUP
5-totally agree	9,1%	13,1%
4- agree	32.3%	47,6%
3-neither agree nor disagree	52.5%	31,0%
2-disagree	0.0%	4,8%
1-totally disagree	6,1%	3,6%

Nota. Elaboración propia.

Both groups showed similar results in all the items, most of the students agree that both LMS platforms and GNU resources offer an interface that is friendly to the user with an easy interface to reach all the tools and materials that they offer to the user. Likewise, the percentage of students that took a neutral position against the user's satisfaction is similar between them just with a difference of 4%. Finally, a small part of the students disagrees because they don't feel that the platform or the gnu resource provide a virtual space in which they could have a significant learning process.

FINDINGS AND INTERPRETATION OF RESULTS

As a general interpretation of the data collected through the research project and after the cross analysis between the categories, it can be said that the LMS platform Elpost.education has some slight advantages in the academic effectiveness after the comparison of the results.

Regarding the academic effectiveness criteria or category, that was measured with the Aptis test



based on its CEFR bands and the comparison between the pretest and posttest results, the students in the experimental group that used the LMS platform improved their reading level, as some of them passed from the band A1 and A2 in the pretest to B1 in the posttest.

Also, it is relevant to mention that students in the experimental group, those who use the LMS platform, at the end of the implementation of the didactic units, obtained better results in the evaluative questionnaire about literal and inferential reading. Students who use the platform obtained better results in the inferential reading questions of the evaluative questionnaire, showing a slight advantage over those students who used the GNU resources.

Similarly, Rodriguez and Vargas (2020) found in their study how an LMS platform helps develop the students' writing skills by using an LMS platform, and even at the same time, it improves the students' attitude towards learning.

It can be the same case of the students of the present research study using the LMS platform Elpost.education, who expressed through a Likert survey their satisfaction and opinion about some criteria related to the general, technical and didactic effectiveness of the platform. It was found that students like the LMS platform and keeps them motivated to read in a second language. In addition, more than 50% of the students found that platform stability is effective, and it is easy to interact with it. Likewise, most of the students found that the platform motivates them to spend more time using it and helps them develop autonomy and independence. Finally, more than 50% of the students answered that they are satisfied with the platform and would recommend it to a friend.

This complete analysis of the different criteria or categories involved in the present research project is relevant to understanding the academic effectiveness of the LMS platform Elpost.education on the students' reading skills. It is evident, with some slight advantages, that



the LMS platform has a better academic effectiveness than gnu resources in this context and that students have in general a good opinion about the functions and services of the LMS platform. It goes in concordance with many studies about the impact or analysis of LMS platforms on educational settings and students. An example of this is the study by Furgon et al. (2023), who explained that there are many positive effects of using LMS platforms on the students' academic performance. Also, their study shows that the students' perception and satisfaction is positive regarding different LMS platforms features, such as accessibility, usability, interaction with learning material, among others.

CONCLUSIONS

As the final stage of the research project, and as it is usual after any investigation, it is significant to conclude the project with the most important findings and results and understand their connection with the research question, general objective and specific objectives.

Regarding the general objective, specific objectives and research questions and their relationship with the data gathered and its analysis, it is relevant to say that the main objective, that was to analyze the academic effectiveness of a commercial online learning platform aimed at reading comprehension in a second language, was fulfilled with interesting results and findings. To do that analysis, it was necessary through the specific objectives of the project to establish a path with some phases to answer the research question: How to determine the academic effectiveness of a commercial online learning platform aimed at reading comprehension in a second language? To answer this question, 4 specific objectives were defined to accomplish the main objective.

The phases developed in the research were guided with the specific objectives that served as a compass to not lose the main research objective. The specific objectives were to characterize the platform, evaluate the students' reading comprehension level, develop a quasi-experimental study with the experimental and control group and finally, compare the results of

the quasi-experimental study in terms of academic effectiveness.

As a general conclusion, it can be said that the results showed a slight advantage of the LMS platform over the GNU resources, in terms of academic effectiveness. The academic effectiveness criteria was defined by the Aptis CEFR bands and the Likert scale survey. The data revealed that some students in the experimental group moved from A level to B after the after the implementation of the didactic unit using the LMS platform. Also, the students expressed through the survey their positive satisfaction regarding different aspects of the platform, such as its interface, ease of interaction, usability, motivation to spend more time using it and development of autonomy and independence.

On the other hand, throughout the development of the project, the relationship with the school community during the research implementation was satisfactory, as the school principal, teacher and participants were willing to help with the research phases. In regards the experience as researchers and the connection of this process with the masters in bilingual learning environments, it is pertinent to recognize that it was a hard but satisfying path, in which we could learn and link aspects about theories and constructs, bilingual education, learning environments and educational management. It was surprising to discover how all these terms and concepts are articulated and connected, and that each one of them have a clear purpose on the configuration of bilingual learning environments and the students' success learning a second language.

From the educational management field, it is necessary to conclude the importance of this aspect in all the teaching and learning process. Although it is not recognized, it is crucial that principals and school leaders constantly supervise and follow the implementation of resources and strategies, since it is important to check their effectiveness and prepare changes when necessary. In this specific research, learning results cannot be taken for granted just because the



school is using an LMS platform, as Babativa (2012) explains, not because a teacher or a school uses technology the learning results are effective. It is necessary to establish clear objectives when using technology in education, and the most important, to check their effectiveness.

LIMITATIONS AND RECOMMENDATIONS

In the present quasi experimental research, the principal aim of the project which was to determine the academic effectiveness of a commercial online learning platform in reading comprehension processes. However, even the results of the research were conclusive, it is important to express some limitations that were found during the whole research. According to this, the first limitation in the research was the size of sample because being only two groups the sample could be reduced and don't reflect the same behavior of the other groups that are working with the same tools. However, the idea with the quasi-experimental research was trying to reach a general idea about the effectiveness of an LMS platform vs gnu resources and how students perceive them in their reading comprehension ability and it was accomplished but a lower scale.

Likewise, another limitation found during the develop of the project was the lack of time for developing the gathering and analyze of information since, in the school in which the project was conducted the English classes only have two hours per week which limit the process to interact and carry on the activities like the application of tests or didactic units, also the students in eleven grade normally have many activities that sometimes affect the process to gather information for analyzing.

FURTHER RESEARCH

From the development of the present research project, that was focused on analyzing the academic effectiveness of an LMS platform compared with the use of gnu resources when learning reading comprehension, many ideas and difficulties have emerged. It has been important to analyze the results of the project, as reading skills, as well as other skills, are important in the acquisition of a second language.

Hence, after this research project, it would be interesting to analyze the impact or academic effectiveness of LMS platforms on other language skills, such as writing, speaking or listening. From an educational management perspective, it is always necessary to check the development and progress of the students' skills in a second language, and it entails to analyze the effectiveness of resources and tools used in the students' learning process.

On the other hand, as another possible further research after the implementation of this project and bearing in mind the importance of educational management in bilingual education, it would be crucial to develop a study with principals or school leaders about their perceptions and supervision on the use of technology and LMS platforms in the students' bilingual learning process.



Finally, it would be significant to propose a guide or course for two purposes. The first one is for principals and school leaders to deepen more on the analysis and use of technology in bilingual education, and secondly it is important to train teachers and students in the use of technology in the teaching and learning process.



References

- Ahern, A. & López-Medina, B. (2021). Developing pre-service teachers' digital communication and competences through service learning for bilingual literacy. *Training, Language and Culture*, 5(1), 57-67. <https://doi.org/10.22363/2521-442x-2021-5-1-57-67>
- Beardsmore, H. B. (1993). European models of bilingual education: Practice, theory and development. *Journal of Multilingual & Multicultural Development*, 14(1-2), 103-120.
- Cruz, C. E. Z., Colado, A. Z., Ocegueda, A. T. S., & Escobedo, R. M. V. (2020). Análisis crítico de ambientes virtuales de aprendizaje. *Utopía y praxis latinoamericana*, 25(11), 33-47.
- Delamont, S. (Ed.). (2012). *Handbook of qualitative research in education*. Edward Elgar Publishing.
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The Sage handbook of qualitative research*. sage
- Fránquiz, M. E., Ortiz, A. A., & Lara, G. P. (2021). Loss or rebirth? Bilingual educators and communities during the time of COVID. *Bilingual Research Journal*, 44(1), 1-5.
- Firdaus, M. F., & Mayasari, S. M. (2022). SCHOOLY- AIDED INSTRUCTION: MEASURING THE EFFECTIVENESS FOR STUDENT-TEACHERS' READING COMPREHENSION ACHIEVEMENT. *JOLLT Journal of Languages and Language Teaching*, 10(3). <https://e-journal.undikma.ac.id/index.php/jollt/article/view/5311/3531>
- Gopalan, M., Rosinger, K., & Ahn, J. B. (2020). Use of quasi-experimental research designs in education research: Growth, promise, and challenges. *Review of Research in Education*, 44(1), 218-243.
- Granero, A. & Baena, A. (2015). Diseños de Aprendizaje Basados en las TIC (Moodle 2.0 y Mahara) para Contenidos de Anatomía, Fisiología y Salud en las Clases de Educación

Física Escolar. *International Journal of Morphology*.

Kirss, L., Säälik, Ü., Leijen, Ä., & Pedaste, M. (2021). School effectiveness in multilingual education: A review of success factors. *Education Sciences*, 11(5), 193.

Larson-Guenette, J. (2013). “It’s Just Reflex Now’: German Language Learners’ Use of Online Resources.” *Die Unterrichtspraxis / Teaching German* 46, no. 1 (April 1, 2013): 62–

74. Retrieved from: <https://search-ebshost-com.crai->

[ustadigital.usantotomas.edu.co/login.aspx?direct=true&db=edsjsr&AN=edsjsr.unteteacger.m.46.1.62&lang=es&site=eds-live&scope=site](https://search-ebshost-com.crai-ustadigital.usantotomas.edu.co/login.aspx?direct=true&db=edsjsr&AN=edsjsr.unteteacger.m.46.1.62&lang=es&site=eds-live&scope=site).

Lubovsky, D. (2020). Selection of Educational Routes by High School and College

Graduates: A Positive Psychology Approach1. *RUDN Journal of Psychology and Pedagogics*,

17. <https://doi.org/10.22363/2313-1683-2020-17-4-656-670>

Mehisto, P. (2012). *Excellence in bilingual education: A guide for school principals*. Cambridge University Press.

Mohd, N. F. (2019). ESL Learners’ Use Of Learning Management System Features And

Metacognitive Online Reading Strategies. *Journal of Creative Practices in Language*

Learning and Teaching (CPLT), 9. <https://ir.uitm.edu.my/id/eprint/50996/1/50996.pdf>

Muhammad Furqon, Parlindungan Sinaga, Liliyasi Liliyasi, & Lala Septem Riza. (2023). The

Impact of Learning Management System (LMS) Usage on Students. *TEM Journal*, 12(2),

1082–1089. <https://doi-org.crai-ustadigital.usantotomas.edu.co/10.18421/TEM122-5>

Murthy, A. E., & Yamin, F. M. (2017). The Perception And Effectiveness Of Learning

Management System(LMS) Usage Among The Higher Education Students. *Journal of*

Technology and Operations Management, 12(1), 86–

98.<https://doi.org/10.32890/jtom2017.12.1.10>.

Nguyen, T. (2015). The effectiveness of online learning: Beyond no significant difference and future horizons. *MERLOT Journal of Online Learning and Teaching*, 11(2), 309-319.

Nielson, K. B., & González-Lloret, M. (2010). Effective online foreign language courses: Theoretical framework and practical applications. *The Eurocall Review*, 17, 48-65.

Prada Núñez, R., Hernández Suárez, C. A. y Gamboa, A. A. (mayo-agosto, 2019). Usos y efectos de la implementación de una plataforma digital en el proceso de enseñanza de futuros docentes en matemáticas. *Revista Virtual Universidad Católica del Norte*, (57), 137-156. doi: <https://doi.org/10.35575/rvucn.n57a10>

Prasetya, R. E. (2021). Effectiveness of Teaching English for Specific Purposes in LMS Moodle: Lecturers' Perspective. *JELTL (Journal of English Language Teaching and Linguistics)*, 6(1), 93. <https://doi.org/10.21462/jeltl.v6i1.498>

Reynolds, D., & Teddlie, C. (2000). The processes of school effectiveness. *The international handbook of school effectiveness research*, 134-159.

Rodríguez, I. Y., & Vargas, L. J. (2020). Schoology: una herramienta para el desarrollo de la habilidad escrita en inglés. *Colombian Applied Linguistics Journal*, 22(1), 13-28.

Tobón-Tobón, Sergio , & Hernández - Ayala, Hernán (2016). ANÁLISIS DOCUMENTAL DEL PROCESO DE INCLUSIÓN EN LA EDUCACIÓN. *Ra Ximhai*, 12 (6),399-420.[fecha de Consulta 7 de Junio de 2022]. ISSN: 1665-0441. Disponible en:

<https://www.redalyc.org/articulo.oa?id=46148194028>

Vallejo, R., & de Franco, M. F. (2009). La triangulación como procedimiento de análisis para investigaciones educativas. *Redhecs*, 7(4), 117-1



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Appendixes

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Appendix B: [Instruments](#)

Appendix C: [Data Collection](#)