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The role of assistive technologies in teaching english as a foreign language (EFL) to visually impaired students at Liceo Panamericano in Guayaquil.

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PROJECT ADVISOR
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CERTIFICATION

We certify that this research project was presented by **Chippe Villamar, Julissa Stephanie** as a partial fulfillment of the requirements for the **Bachelor's Degree in EFL Pedagogy.**

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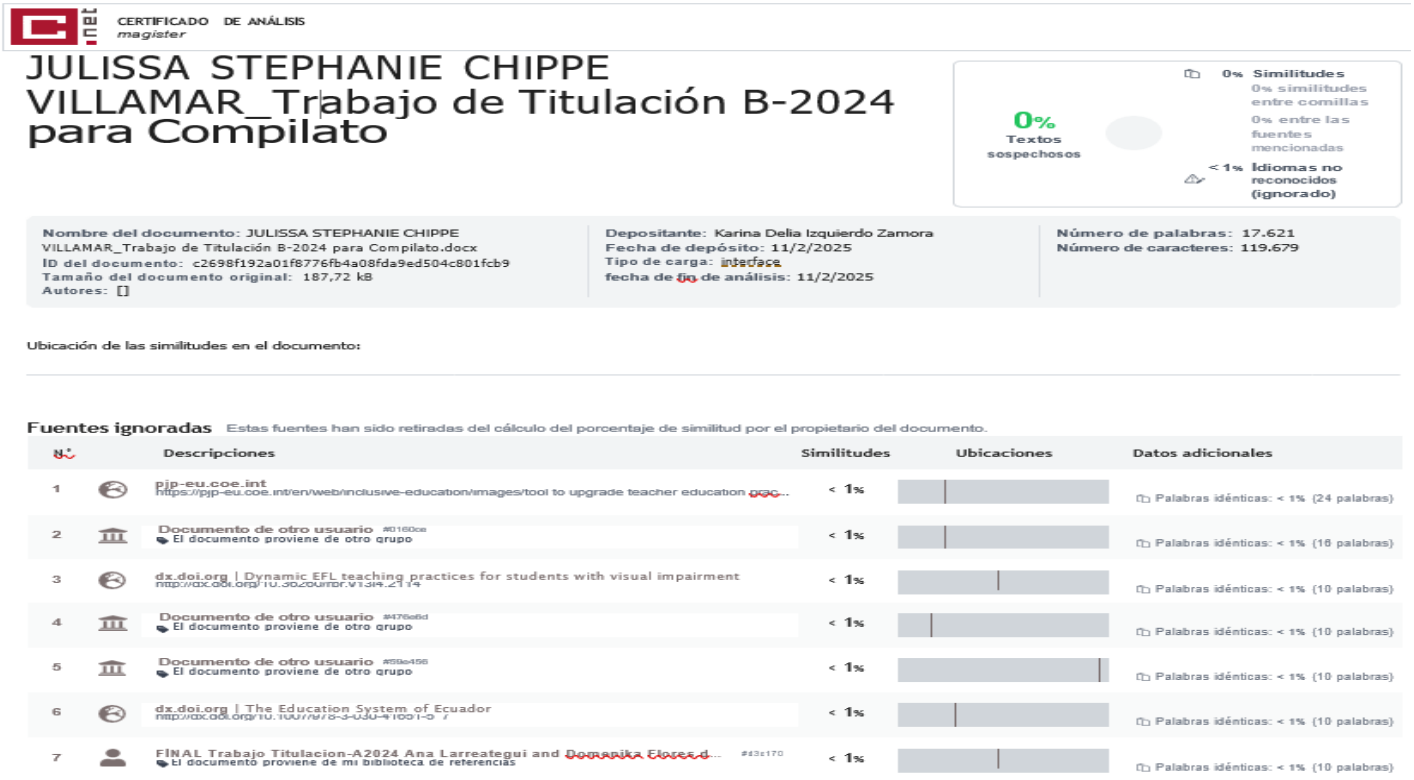

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INDICE

ABSTRACT

This study analyzes the way in which assistive technology supports teaching English as a foreign language (EFL) to a visually impaired student at Liceo Panamericano in Guayaquil. These assistive technologies include various kinds of software, devices and tools that let students with visual impairments the independent access to different sources and digital files, making learning engaging, easier and more effective. This study aimed to explore how these technologies and teaching strategies can improve EFL instruction for visually impaired students.

The study employed an exploratory approach, along with qualitative methods to gather in-depth insights. To obtain the results, unstructured interviews with four English teachers and an interview with the visually impaired student were applied, jointly with unstructured classroom observations. These methods were the basis to identify the tools and strategies applied in teaching English as a Foreign Language (EFL) to visually impaired learners.

The findings showed that while several assistive technologies are available, some barriers were encountered in their access and usage. JAWS (Job Access With Speech), a screen reader, was signed as the primary tool employed. However, the study underscores the need for a wider range of assistive technologies to support knowledge acquisition. It also emphasizes the importance of teacher training in the usage of assistive tools to achieve their effective integration in their lessons. Finally, the research underlines the continued role that Braille plays in the visually impaired students' learning process.

Keywords: EFL (English as a foreign language), Assistive Technology, Inclusive Education, Visual Impairment, Teacher Training, learning process

INTRODUCTION

English is considered the universal language that leads communication and connects different countries; for that reason, it is commonly known as the “lingua franca,” and it is also considered an indispensable requirement in regular education. In this regard, Ecuador highlights the necessity to include English as a basic subject in all the schools and high schools, as a crucial element of the national curricula because of the impact that it generates in the worldwide communication and the great variety of opportunities that it portrays for learners along their different ages. In addition, studying English opens the possibilities to get access to higher educational systems in other countries due to the fact that in the majority of the institutions this language is used as the main mean of instruction.

Being English seen as a central language which underscores its significance in the global context, it is necessary to punctuate that every student, regardless of disability or special need, has the right to access to this essential language. In the Ecuadorian nation, where English is strongly internalized in the national curricula, it is crucial to encompass different strategies for each student, without exception. Referring to visually impaired students, they are part of the educational system and as other students, they have the total right to be aware of the new content and teaching materials for them should be provided.

In this regard, assistive technologies are crucial tools that represent a key solution to deal with these educational challenges and eliminate the learning barriers for students with visual impairments. They propose specific solutions

according to the different students' needs, offering accessible tools that foster the EFL instruction. Although there are different kinds of assistive tools such as screen readers, braille displays and text to speech converters, the implementation of pedagogical strategies and teacher training is crucial to integrate these technologies in English lessons.

Therefore, the implementation of a more inclusive approach tailored to teach English to visually impaired students is essential guarantee the correct integration of assistive technologies as well as the constant teacher training and the adaptation of learning materials. Based on the analysis of a systematic literature review, this study is aimed to explore the role of assistive technologies in English teaching for visually impaired students at Liceo Panamericano school in Guayaquil, evaluating teachers and student's perceptions, and the technological tools that are used. This research proposes recommendations to enhance EFL instruction for students with visual disabilities through the implementation of these technologies, ensuring equity and quality in education for these students and the entire application of the diverse inclusive strategies.

PROBLEM STATEMENT

Free access to education is a right that belongs to everyone without distinction. This means that individuals, regardless of their background, can benefit from the opportunity to receive an education. Education is a cornerstone for establishing an equitable framework and offers various possibilities in different social fields. In this context, education should be accessible to all people of any age, allowing them to grow, achieve their full potential and personal aspirations, and nurture their progress.

As a result, the term *inclusion* has been acknowledged as a vital element in the educational field, highlighting its significance in fostering equitable learning for every student and catering to the diverse needs of each learner. Sarı et al., (2020) in a study made in Turkey, highlight that inclusive education is considered a human right for everyone without distinction; it benefits people with disabilities because they are freely included in society receiving the same rights. Child-inclusive education has been trying to be implemented in recent years as a synonym for holistic educational approaches that emphasize the integration and engagement of all learners.

Inclusive education strives to provide all students with equal learning opportunities, recognizing each student's unique abilities and strengths. The educational ministry has been actively implementing various strategies and methodologies to promote inclusive education, initiatives encompassing adaptive methods, developing inclusive curricula, and using assistive technology to generate inclusive learning. However, its implementation often falls short, particularly for students with disabilities who frequently face many barriers that hinder their complete involvement in the educational field. Rojas-

Avilés et al., (2020) state that the educational law is working hard to foster a better education that is accessible and inclusive, despite the efforts, it is a reality that the discrimination and lack of inclusion for students with special educational needs (SEN) have not been wholly addressed due to the lack of curricular approaches and inclusive strategies.

Many methods and scaffolding techniques have been adapted to each student's needs to eliminate these barriers. Implementing various techniques, such as using adaptive materials and resources, deploying technological tools, and applying individualized and differentiated instruction, serve as key components that can be incorporated into a contingency plan. In the educational field, a contingency plan is known as a strategic framework aimed at providing suitable education for learners with diverse needs. In this sense, assistive technologies represent the most impactful resources available in today’s education.

Furthermore, assistive technologies are devices and resources specially designed to satisfy the necessities of people with specific disabilities. One of the most essential characteristics and advantages is that the technological resources are included in a conventional device, which fosters collaborative learning and lets genuine involvement into daily practices. In their research Lancioni & Singh, (2014) state that assistive technologies are crucial in engaging people with visual disabilities because they bring positive outcomes in the student's autonomy and the activation of other senses. For instance, the possibility of adapting screen readers or audiobooks to a conventional device at the school is an advantage for students with a disability because it lets them

feel included and work autonomously. In other recent studies, Campado et al., (2023) state that some interviews with twelve visually impaired teachers showed that assistive technologies are considered satisfactory means of learning and a motivating way for them to understand the information provided.

This thesis examines data collection regarding the teaching and learning strategies used at Liceo Panamericano for visually impaired students. It evaluates the incorporation of assistive technologies within the educational process, analyzing the effectiveness of both traditional and technological methods in enhancing active participation and assessment for these students. Furthermore, this research aims to draw conclusions and provide specific recommendations based on the experiences of the students and teachers involved, thereby contributing valuable insights for future studies on the feasibility of implementing assistive technology as a fundamental approach to teaching visually impaired learners.

JUSTIFICATION

This research aims to clarify the factors affecting visually impaired students' academic achievement and limiting their classroom performance. Understanding these determinants is crucial for reinforcing inclusive education. This research is conducted to collect information from Liceo Panamericano in Guayaquil, considering the strategies and methodological techniques applied to address the challenges this non-visual student and her teachers face. These challenges include insufficient pedagogical approaches, the lack of materials and didactic resources, and inadequate systemic support provided by national curricula. Furthermore, this research aims to gather information about the use of assistive technology in the educational experience of visually impaired students at the mentioned school, which could aid in fostering their autonomous learning and enhancing the teaching-learning process.

In addition, this project seeks to align technological resources with the necessary strategies and methodologies for addressing the diverse educational issues that visually impaired students can encounter. These challenges belong to different education, psychology, and social development contexts. In this context, the paper will also provide a comprehensive literature review, including information about constructivist and social learning theories, in which active learning plays a crucial role in permitting students to understand and apply their knowledge.

Finally, this study describes the impact of assistive technology on a student with visual disabilities' educational progress, how it fosters her engagement, and how it ensures an inclusive environment in the classroom. Exploring the

positive effects of assistive technology for this student is a crucial step for future research because it allows for developing contingency plans that include assistive technology, which could help non-visual learners gain independence in their educational journey. Additionally, this research will benefit policymakers and teachers interested in authentic, inclusive education to support academic and social advancement.

Research Questions

1. What teaching strategies and assistive technologies are currently employed by educators to support visually impaired students in learning EFL at Liceo Panamericano in Guayaquil?

2. How do specific assistive technologies enhance the learning outcomes of visually impaired students during English as a Foreign Language (EFL) classes at Liceo Panamericano in Guayaquil?

Main Objective

To explore the role of assistive technologies and learning strategies in teaching English as a Foreign Language (EFL) for visually impaired students at Liceo Panamericano in Guayaquil.

Specific Objectives

1. To assess the perceived effectiveness of various assistive technologies in facilitating English language learning for the visually impaired student at Liceo Panamericano.

2. To identify learning strategies that can be integrated with assistive technologies to enhance the language acquisition process for visually impaired EFL learners.

3. To explore teachers' perceptions through unstructured interviews regarding their experiences and challenges in teaching visually impaired students using assistive technologies.

4. To develop targeted recommendations for enhancing EFL instruction for Visually Impaired Students based on findings from interviews and unstructured observations.

LITERATURE REVIEW

1.1 Constructivism

Constructivism is a psychological and educational approach that emphasizes active learning to assist students in developing their knowledge. According to Doychinova, (2023), constructivism is a learning mechanism through which learners acquire knowledge by participating, applying their existing knowledge, and drawing on personal experiences. “Constructivism (from Latin constructio– construction) is a scientific trend based on the notion that the activity of the subject of inquiry utilizes experience and special reflection procedures (communications) to create (construe) images, concepts, and judgments.” (Portere & Briede, 2021, p.2)

Learners’ experiences are essential for generating knowledge because learning occurs when students connect new information to their background. For this reason, teachers must be aware of their students' interests, ideals, and contributions as learners, allowing them to construct knowledge and achieve their objectives in the classroom. Knowledge is a crucial aspect of the learning process. For instance, it means that students acquire information and familiarize themselves with the details they receive. Knowledge acquisition refers to a complex process in the brain, which consists of gathering the information acquired and interiorized by humans using different methodologies. The acquisition of knowledge occurs in various ways, including managing internal storage, which can operate in the short or long term, as well as the ability to apply what is internalized at different stages of life. At this point,

knowledge becomes a crucial part of the learning process, and the role of educators, including those involved in assessments and publishing, is to represent this knowledge and provide students with the necessary tools to assimilate it. MOHAMMED & KINYO (2020) state that knowledge exists beyond curricula or any professional field, and the most effective way to acquire new knowledge is by engaging with existing information and reconstructing previously obtained insights through learning activities. Knowledge acquisition is crucial for learners' experiences, as it allows for the development of individuals' capacity to comprehend real-world issues and enhances their ability to make the best decisions based on their experiences and internal understanding.

As a conceptual background, "constructivism" was developed during the XX century. At that time, it started to be used as part of the educational field, highlighting active learning as a pivotal tool for acquiring knowledge. "Constructivism is a theory proposed to improve teaching so that students foster new understandings of information by consolidating information that they have effectively acquired" (Wang, 2022, p.1). At that point, constructivist theory showed that students participate with their ideas and experience in the generation of new knowledge. The research on constructivism started with the work of Jean Piaget, a biologist and psychologist born in 1896. He conducted his analysis through the idea of cognitive development, which was formed by four stages, and states that children can learn even before they acquire the capacity to speak. In this context, he developed the constructivist theory, which consists of two fundamental processes: assimilation and accommodation. Piaget, 1952) states that learning is a process divided into stages, in which

each stage cannot function without the presence of the previous one, and constructivism is the way of learning and acquiring knowledge through the usage of students' own experiences. As a result of knowledge acquisition, the brain is an organizer that receives and structures information to enhance learners' understanding of their preferences. Alhabib, (2021) emphasizes that the Piagetian theory of constructivism is aligned with actual ideals because students begin to construct knowledge based on their existing mental frameworks; in this way, new knowledge differs from what already exists.

Furthermore, Piaget's cognitive theory posits that students must consider their previous experiences to create a connection between what is learned and what is new. Therefore, the assimilation stage reviews the most recent information received. In contrast, the accommodation stage organizes information with prior knowledge and discards what is redundant or unnecessary.

The psychologist Lev Vygotsky (1896-1934) also contributed by giving cognitive developmental theory a social focus to support constructivist theory. According to Vygotsky (1978), learning is primarily a social process, and social interactions are how new knowledge is acquired. As a conceptual background, "constructivism" was developed during the 20th century. At that time, it began to be used in the educational field, emphasizing active learning as a pivotal tool for acquiring knowledge. At this point, constructivist theory demonstrates that students engage with their ideas and experiences in generating new knowledge. Research on constructivism began with the work of Jean Piaget, a biologist and psychologist born in 1896. He conducted his research through the concept of cognitive development, which comprises four stages, and

asserts that children can learn even before they develop the ability to speak. In this context, he formulated constructivist theory, which involves two fundamental processes: assimilation and accommodation. Piaget (1952) posits that learning is a process divided into stages, each of which cannot function without the preceding one, and constructivism represents the way of learning and acquiring knowledge through the use of students' experiences.

Although the two thinkers were centered on constructivism, Vygotsky's view rejected the idea of Piaget, which stated that learning was acquired through stages. His point involved the idea that learning was obtained by collaborative working and social interactions. While Piaget concentrated his studies on analyzing the different stages of cognitive development, Vygotsky worked on investigating how the learning process was developed by the construction of social relationships and the acquisition of knowledge through the zone of proximal development (ZPD), which refers to the space between the acquisition of learning as an individual and the understanding with guidance. Huang, (2021), states that while Piaget suggests that children use what is in their environment during the learning process, Vygotsky emphasizes the intervention of social interaction and culture as crucial learning elements.

In addition to these two thinkers, other authors contributed to the notions about constructivism, stating that this pedagogical theory can be seen as a way of acquiring knowledge in which every individual learns differently and in an independent process. One of these thinkers was John Dewey (1859-1952), who demonstrated that learning is a process structured around concrete experiences, making it a potential resource in which students must engage to

foster better understanding. Dewey (2024) argues that students acquire and develop knowledge through experiential learning. His theory posits that students must construct learning by recreating their knowledge and applying what they gain in the relevant field. Dewey rejects traditional academic techniques where prescriptive methodologies dominate. Jumaah (2024) suggests that Dewey's approach supports the idea that schools should move away from conventional methods, where students are assigned numerous courses and subjects, which negatively impacts constructivist roles.

During the acquisition of knowledge, students engage in active learning that undergoes several changes, according to Dewey's theory. These changes include receiving information, where students begin taking notes on what they hear, and summarizing, in which students synthesize information to identify what is most important. Discussion is also part of this process, allowing students to share what they have learned and make decisions based on their experiences. This constructivist approach prepares students for the real world by teaching them how to formulate their points of view and ideas about their surroundings. Dewey, the theorist who developed the active learning theory, explains that students can build knowledge and generate ideas based on their experiences and the information they acquire.

1.2 Active Learning Theory

Active learning is viewed as a new educational approach contrasting traditional and passive learning methods. According to AS et al. (2024), active learning includes a series of strategies through which students learn to process the material presented in class and create keywords to internalize the information

provided and address their learning difficulties. In active learning, students embrace “learning by doing.” They actively engage in classroom activities and suggest ways to continue their learning. In active learning, students must do much more than just listen to the teacher, as Patiño et al. (2023) noted.

Additionally, active learning is a valuable tool for all students and is commonly used in the educational system. It provides students with a foundation for developing critical thinking skills and sustaining their motivation regarding information in academic curricula. Furthermore, active learning can include various activities, such as role-playing, teamwork, debates or discussions, and classroom participation presentations.

Furthermore, active learning allows the brain to decide what to learn and what is necessary. First, the brain makes neuronal connections, the required steps to generate new knowledge. With these neuronal connections, the brain organizes the background information with the new one, eliminating unnecessary information. The distinct methodologies applied to help children learn actively will help them stay engaged in the class and assimilate the content better. For instance, giving the students the tools to know and understand what is received will help them develop the ability they have intrinsically implied in the brain. “Infants are active, endogenously motivated learners who structure their learning through flexible selection of attentional targets and active interventions on their environment.” (Raz & Saxe, 2020).

As a result, students develop critical thinking skills and acquire significant information in less time. Additionally, active learning fosters the ability to solve various situations. Children can make informed decisions about their future

needs by engaging in this. According to (Hassabo & Ibnauf, 2024), active learning enhances language skills through interactive and diverse activities that encourage thinking.

1.3 Social Learning Theory

The social learning theory, which later evolved into “social cognitive theory,” was developed by Albert Bandura, a Canadian psychologist born in 1925 and passed away in 2021. This theory fundamentally centers on learning through observation, also known as modeling. Bandura (1977) posits that children learn by watching adults; they respond to whether the behavior is good or bad. Children learn from the modeling influences they observe and perceive in their external environment, considering the beliefs and ideas of others to develop knowledge. Amsari et al., (2024); Koutroubas & Galanakis, (2022). Bandura based this theory on the idea that the repetitive nature of actions allows learners to gain experience through the information recalled during these observational processes. He described this procedure as consisting of four stages: attention, retention, reproduction, and motivation. Attention involves responding to the behavior of external individuals, requiring a high concentration level to understand detailed information. Next, the retention stage consists of observing and recalling the key details of the behavior. This stage is crucial to social learning because properly assimilating this information accurately explains the observed behavior. After that, reproduction is where the learner applies what has been retained in memory after the observation process. Thus, attention and retention enable the learner to feel capable of developing imitative behavior based on their physical and cognitive conditions.

Finally, motivation emerges as one of the most essential elements of the learning process. Even if the student has internalized the previous three stages, social learning cannot be effectively applied without motivation. “Motivations are cognitions containing information about which behaviors are likely to be reinforced in specific situations” (Proctor & Niemeyer, 2020). When students lose motivation, their ability to learn can be hindered by feelings of incapacity and a desire to withdraw, negatively impacting the imitative behavior process.

Additionally, social learning can sometimes create confusion with behaviorism. However, observation enables learners to engage actively in the process. By relying on their past experiences, they determine what is best for them through a cause-and-effect analysis that helps them fully participate in activities and stay motivated. Furthermore, vicarious reinforcement enhances students' critical thinking and decision-making skills, benefiting their mental well-being and growth.

Since social learning is intrinsically linked to active learning, it is a crucial tool for inclusive classrooms. Firstly, it enables students to develop their ability to perceive and analyze what they observe and engage in the learning process through subsequent stages. Consequently, teachers in inclusive classrooms must be aware of students’ skills and physical and learning barriers to work effectively with them and facilitate understanding through observation. Prasetyo et al. (2021) explain that teachers in regular classrooms need to account for the abilities of SEN learners to assist them in participating in an

active learning process by observing behaviors and recalling and reproducing the most critical concepts and information.

1.4 Inclusive Education

In this context, inclusion is essential in real education. It has become a fundamental aspect of active and social learning methods, as inclusion is viewed as a collaborative and social endeavor. This concept arises from recognizing that everyone has the right to free access to education. The Universal Declaration of Human Rights states, "Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages" (United Nations, 1948). Furthermore, inclusion has significantly increased, focusing on educational and social justice as fundamental and essential values. Papadopoulou & Vasilaki (2024) explain that the term inclusion became a crucial topic in the 1960s when the slogan "nothing about us without us" promoted the active participation of people under that principle. However, the concept of inclusion in education originated a couple of centuries ago with the idea of academic integration. Rapp & Corral-Granados (2024) highlighted the distinction between inclusion and integration, drawing on earlier research revealing that these terms differ in focus, as integration is a broader concept. In this context, other schools and educational centers were established, reinforcing the idea of inclusion.

One of the first established institutions for individuals with disabilities was the school founded by Charles Michel L'Epée, a pioneer in education for disabled individuals, as noted by Bhatia & Singh (2021). These schools introduced new methodologies for reading, writing, and communication. For example, deaf

students learned a technique based on signals, while non-visual students began with a system known as Braille. Luis Braille, a critical thinker, musician, and educator who lost sight due to an infection in both eyes, developed this reading and writing system. It was first published in 1829 and provided blind individuals with access to educational and employment opportunities. “The braille system, officially adopted in France in 1854, continues to impact the lives of blind readers today.” (Thompson & Christian, 2024). Consequently, establishing these schools promoted the implementation of various policies related to inclusion and the recognition of human rights. At that time, this type of education was primarily available to wealthy individuals, which limited access to these learning methodologies for those with fewer resources.

Additionally, implementing policies addressing educational inclusion intensified during the 20th century, when a previous focus on inclusion and diverse needs evolved into a central philosophy in educational systems. It was during this time that human rights and inclusive policies gained recognition. Inclusive education is accommodating each learner's diversities by utilizing various means of participation and engagement. “The foundation of inclusive education is that all children can study together, develop, unite, and support each other." Polsaidova & Jamolbekovna (2023), and Sadikovna & Azimjon o‘g (2023) also assert that inclusion offers significant benefits for students with disabilities, preventing discrimination and promoting equity for all students.

Furthermore, inclusion is a right for all students to attend any regular school, regardless of their physical or cognitive needs or challenges. According to Mendoza & Heymann (2022), inclusion is a strategy applied in education to

enhance students' participation in educational activities without exception, aligning with the fundamental principle of the right to learn. With inclusion, students can actively engage in learning and critical thinking activities while working in the same educational environment as their peers, fulfilling the same responsibilities and duties.

1.4.1 Inclusive Education in Ecuador

Educational inequity is a problem that has existed for decades. In this regard, Ecuador is concerned about inclusive education, working on various policies and legal frameworks to meet all students' needs. Each government has collaborated closely with the Ministry of Education during its administration to ensure the best education for individuals with diverse conditions. According to Gómez et al. (2023), educational inclusion began developing in 1940, during what is known as the assistance period, which reflects the interest that private centers and caretakers of individuals with disabilities had in addressing the issue, creating specialized spaces for the care of people with diverse needs, guided by charity and benevolence.

Over time, the ideals and helping strategies started to vary, going from the idea of supporting people with disabilities in only one center for everyone, extremely focused on apparel and food, to something more specific, trying to create specialized centers where people could receive prior attention according to their disabilities. In 1970, some schools started to operate to provide education for people with diverse needs. A crucial step was taken: The General Education Law of Ecuador (1970) emphasized the need for inclusive education, highlighting that educational institutions should accommodate all

students, regardless of their individual needs. The educational ministry, Gómez et al., (2023) developed the first educational plan for individuals with disabilities, working under agreement #627 to establish the special education unit. Following this, the fragmentation and development of diverse schools for individuals with various physical and intellectual conditions became more pronounced in 1980, mainly under the National Institute for Children and Family (INFA) guardianship. The National Institute for Children and Family (INNFA) has played a significant role in safeguarding the well-being of children and families in Ecuador, implementing policies designed to protect their rights 2010).

The Republic of Ecuador's political constitution, enacted in 2009, contains different articles focused on the attention of people with diverse needs. For instance, article 35 of the Constitution of the Republic of Ecuador states that everyone can receive education without discrimination. This principle is crucial for fostering an inclusive education without any distinction. Therefore, each governmental administration has been working on providing educational inclusion for people with diverse needs. The organic law of intercultural education in Ecuador has different articles strictly focused on the attention to people with disabilities and their right to an inclusive education. According to Article 47 of the Ley Orgánica de Educación Intercultural (2011), "the State shall guarantee inclusive education for people with disabilities, ensuring their right to education without discrimination" (Asamblea Nacional del Ecuador, 2008, p.15).

Government administrations have been working over the years to ensure the quality and reliability of educational policies. For instance, the educational ministry has developed different programs to foster inclusion without barriers to people with various academic needs. The subsecretaria of special and inclusive education was established by the ministry of education of Ecuador as a vital initiative to foster the inclusion of children with various needs in regular education without barriers. This entity is tasked with developing public policies and training teachers by equipping them with the skills and pedagogical materials needed to support students based on their requirements. Another initiative launched during this decade was “Plan Toda una Vida (2017)”, which aims to promote universal access to education for children and young people without restrictions, particularly for those from vulnerable groups. This plan emphasizes inclusive policies, which involve adapting the curriculum and modifying teaching methodologies and resources to meet the varied needs of students. Giving special attention to students with disabilities is crucial, as well as ensuring that schools are accessible and that specialized services are available to support these students.

Furthermore, the plan emphasizes ongoing teacher training to equip educators with the essential tools to address the challenges of inclusive education, including the implementation of differentiated teaching strategies and assistive technologies. This plan also highlights the significance of creating accessible spaces for students with physical disabilities to ensure optimal educational conditions and accommodations in infrastructure that will help them feel comfortable in their institutions.

Implementing this plan, the Department of Education continued its efforts to provide the best education for individuals in vulnerable sectors. In this regard, the Department of Education developed an inclusive educational policy in 2019, and supporting students with various disabilities and their teachers was a pivotal action. Furthermore, in 2020, the Subsecretariat of Special Education and the LOEI were enhanced and reviewed to ensure high-quality services for minority populations.

1.5 Assistive Technology

Recent research has shown that technological devices such as laptops or smartphones have been considered beneficial tools for the learning process of students with disabilities. Fernández-Batanero et al. (2022). This is because these assistive technologies allow students with disabilities to gain independence in their daily performance in classrooms and with their assignments. Bouck & Long (2021) state that in their research about using assistive technologies and their benefits. According to Atteng & Thompson, (2024) assistive technologies offer the advantage of the possibility to reduce the effects that disabilities can cause in daily performance because they are tools that provide them the opportunity to perform tasks that otherwise were impossible. “These technologies include using computers with screen readers, braille displays or printers, text-to-speech (TTS) software, different hardware, and audio-based navigation devices, which enhance accessibility and expand the possibility of learning and contributing to society.” (Sajid & Hussain, 2021) According to Aleem et al. 2022), Visually impaired students can benefit from

revolutionary technologies such as speech recognition, screen-reading tools, Braille displays, and text-to-speech solutions.

Table #1:

Assistive technology	Description
Screen readers	“Provide synthetic voice output of textual information displayed on a computer screen, enabling visually impaired users to navigate and operate the system through auditory cues.” Miura et al. (2024)
Braille devices	“Tools and Gadgets that electronically convert the information on screens into braille codifications through the usage of cells.” Dolphin et al. (2024)
Voice recognition software	“Also known as Automatic Speech Recognition (ASR), is a technology that converts spoken language into text.” Kurbanazarova et al. (2024)
Text-to-speech apps	“(TTS) refers to the process of converting written text into speech using artificial intelligence-powered voice generators.” Amin (2024)

OCR (optical character recognition cameras)	“A technology that extracts textual information from images or scanned documents to convert it into machine-readable formats.” Fateh & Fateh (2023)

1.5.1 Screen Readers

For blind individuals, screen readers are essential for operating a computer or any other technology. "Screen readers are software programs that enable blind or visually impaired individuals to access and comprehend digital content by reading aloud the text displayed on the screen." Oh et al. (2021). Screen readers can be used on computers, tablets, and smartphones. Sankhi & Sandnes (2020) found that screen readers are valuable tools that empower people with visual impairments to read what appears on screens. This is why most smartphones and devices come equipped with this assistive technology.

The most commonly used screen readers for computers running the Windows operating system are JAWS, which stands for "Job Access With Speech," and NVDA, which stands for "Non-Visual Desktop Access." According to Viner,, (2024), these tools are responsible for converting the text displayed on screens into speech, providing access to nonvisual individuals using computers. According to Freedom Scientific (n.d), JAWS is a highly effective screen reader designed to provide blind individuals access to digital content, featuring screen reading, braille display support, and compatibility with widely used applications. This screen reader requires payment to obtain a license.

Conversely, its demo mode allows usage for only 40 minutes. It supports various languages based on users' needs. Dheesha (2020), in a case study conducted in India, found that cost can be a significant barrier to using JAWS despite its functionality. That is why many people, regarding the positive advantages of this program, consider using the pirate mode of Jaws due to the complexity of access. "A 2012 study in India found that most screen reader users relied on JAWS, but 56% of these users relied on pirated copies of the software." (Govindarajan, 2022)

On the other hand, NVDA, which stands for non-visual desktop access, is most commonly used due to its unrestricted functionality. NVDA is a free access screen reader that is designed to provide blind people the possibility to use Windows operating systems' computers without restrictions; being a portable, fast, and lightweight program that permits access to any computer in different places and moments. NV Access (n.d). Furthermore, it is available in other languages, which makes it interesting for visually impaired individuals to work with it. Accessibility is also a significant advantage. NV Access (n.d) states that the OCR mode enhances the capability of reading inaccessible PDFs or text images. NVDA is particularly useful in educational settings due to its effectiveness and the availability of complimentary access. A study conducted in Iran tested visually impaired (VI) students to assess the efficacy of this screen reader in their vocabulary learning. Saeedakhtar et al. (2024) demonstrated through the results of a test involving 22 students divided into experimental and control groups that NVDA significantly aided the experimental group in improving their vocabulary understanding and correcting misspelled words. Compared with a case study in Indonesia, the results are

consistent regarding using NVDA as a crucial tool in the English learning process. In this case study, Susanto, & Nanda (2018) noted that during classroom observations and interviews with students with visual disabilities, they emphasized the advantages offered by this screen reader and their necessity and preference for auditory feedback instruction.

In addition to the previously mentioned screen readers, other options, such as VoiceOver, which is used on Apple devices, and TalkBack, designed for the Android operating system, are also available. According to Apple (n.d.), VoiceOver is an assistive technology that can be used on devices running macOS or iOS and reads all the information displayed on screens aloud. Similarly, TalkBack is a screen reader for Android devices; Google created it to provide blind individuals with eyes-free control of their mobile phones and electronic devices, as is explained by Google (n.d.)

1.5.2 The Braille System

As noted in the previous section, screen readers are valuable assistive technologies that have significantly transformed how students acquire knowledge. Nonetheless, Braille remains a fundamental tool for visually impaired students. According to Lupetina (2022), the Braille System is essential for the independence of blind individuals because it enables them to access all kinds of information and enhances their cognitive skills while reading and writing. A case study conducted in Paris by Al-Jumaily et al. (2024) demonstrated that Braille contributes to positive psychological effects on blind students.

Louis Braille developed this innovative system. “Louis Braille (1809–1852) was a musician, educator, and innovator whose tireless devotion to creating a tactile system of reading and writing provided access to education, employment, and independence for people with visual impairments.” (Thompson & Christian, 2024). Braille is a code used by blind individuals, created due to the inventor’s vision loss at five years old. “The basis of the braille method is known as a braille cell, which consists of six dots numbered in a specific order.” (Alvarado, 2022) The columns are organized in the following manner: one, two, and three on the left and one, two, and three on the right. “To read Braille, one must trace each line from left to right using their fingertips and sense of touch.” (Ansari et al., 2024). In 1858, Braille was voted the leading and universal standard of reading and writing for individuals with blindness globally, as Sen & Honavar (2022) stated. This system also includes special codes for mathematics and music. Various studies highlight the importance of Braille in developing learning skills. Regarding English instruction, Sheffield et al. (2022) note that Braille is a tool that enables students to enhance their understanding of spelling, grammar, and punctuation skills, which audiotapes and voice synthesizers cannot provide. This finding aligns with the case study conducted by Tellez et al. (2023), in Mexico, where all participants agreed that Braille is proper for English instruction after a survey.

In addition to the stylus and slate, as well as the Braille manual and electric typewriters, which are traditional means for writing Braille, technological advancements have broadened the possibilities of using this writing system, resulting in the development of various devices that facilitate access to and

production of these materials. According to Siddikov & Mullajonov (2022), a Braille display generates embossments from a 2x3 array of dots on the device that the blind user can touch. The dots return to their original position, and the following letters are embossed. A significant issue with this assistive technology is its high cost, which limits its usage. A survey conducted among blind individuals in Mexico by Ramos-García et al. (2022) revealed the challenges faced by blind people in low-income regions in accessing these Braille displays. Likewise, Apu et al. (2021) argue that the high cost of Braille displays is a significant barrier that limits their accessibility. For this reason, both studies agree that developing a low-cost Braille line is the most effective solution.

Additionally, another method connects the braille system with digital media, featuring braille printers that convert electronic texts into physical pages. “With advanced features like high-quality embossing, user-friendly interfaces, seamless connectivity, and support for tactile graphics, this state-of-the-art Braille printer significantly enhances the quality of life and opportunities for visually impaired individuals" (Vo et al., 2023). Another technological resource utilized to produce braille texts is OCR technology, which stands for optical character recognition. As Wang (2023) explains, this system allows for the conversion of scanned images and documents into readable text for visually impaired students in less time and with minimal inaccuracies. Moreover, Geethalakshmi et al. (2021) note that this optical recognition mechanism aids visually impaired individuals by employing a three-step format consisting of input. This format conversion typically goes from BGR to RGB; the information is obtained in the output step. This system has opened access to various

textbooks and other materials. As highlighted by Preethi et al. (2023), this ensures a seamless experience for blind users across digital books and texts.

1.6 Curriculum Adaptation

Curriculum adaptation is a process that involves making changes and accommodations to the general curriculum, most commonly for students with special educational needs (SEN). According to Ngoasong (2022), curriculum adaptation entails modifying existing materials to suit the requirements of students with disabilities better, differing from curriculum development, which involves creating new materials. Teachers implement these accommodations by understanding their students' abilities and unique needs. Karakuyu, (2023) explains that the process of adapting the curriculum is divided into three stages: before instruction, where teachers informally modify the lesson plan according to student's needs; during instruction, when they adjust the original curriculum based on their earlier observations; and after instruction, where teachers assess the changes they have made and adapt them for future classes.

Table #2:

Adaptation	Modifications	Strategies
Grade 1 or Access to the Curriculum	Space, resources, materials, infrastructure, and time.	Supports such as human resources, spatial and material adaptations,

		alternative communication systems, among others.
Grade 2 or Non-Significant	Grade 1 adaptations, plus adaptations in methodology and evaluation.	Group work, partner reading, collaborative writing, among others.
Grade 3 or Significant	Grade 1 and 2 adaptations, plus adaptations in skills and objectives.	Oral and written tests, objective attitudinal assessment, discussions, rubrics, and evaluation strategies.

Note: Reprinted from (Real-Looral-Loor & Marcillo-García, 2021, p. 953)

Concerning students with visual impairments, curricular adaptations are not considered relevant despite the student's requirements. “The academic capability of Children with Visual Impairment (CWVI) is usually considered as that of non-disabled students due to their good cognitive skills.” (Jahanzaib et al., 2021). For instance, some studies support adapting the curriculum for visually impaired students. Hanif et al. (2024), in recent research centered on the analysis of curricular adaptations developed in Pakistan, strongly recommend the necessity of making adaptations to the official curriculum to include the resources that are required by the blind student, such as assistive technologies, didactic materials, and others. In the same way, research made

by Brixius et al. (2022) in Brazil highlights the requirement of adapting the curriculum, including the necessary materials and resources, to enhance the inclusion of visually impaired students. Similarly, a case study developed in Australia by Fanshawe et al. (2023) underscores the lack of materials. It proposes a curricular adaptation to foster the inclusion of visually impaired members in a regular classroom.

In Ecuador, the Ministry of Education is responsible for curricular adaptations. This information is supported by the LOEI, which in its article 6 literal O, expresses that curricular adaptations are necessary to ensure the full enrollment and the comprehensive inclusion of students with disabilities. (Asamblea Nacional del Ecuador, 2011) According to Ministerio de Educación (2024) the ministerial agreement indicates that the curriculum should be modified to address the needs and requirements of students with disabilities. Research conducted in Ecuador highlights the need to implement curricular adaptations. For instance, according to research by López-Altamirano et al. (2021) in Tungurahua (Ecuador), adapting the national curriculum to enhance the inclusion of students with disabilities is crucial to help them develop their skills. A study produced by Olmedo Suárez (2022), in a scholarly institution located in Ambato states that a qualitative methodology was applied to analyze the situation of students with disabilities. It showed that the learning issues resulted from inadequate curricular adaptations. A more extensive study was carried out by Pineda et al. (2023) related to the application of curricular adaptations, based on the analysis of a systematic literature review of the research from 63 countries, which showed the lack of curricular adaptations on a global scale.

1.7 Teacher Training

In this context, teacher training is crucial for implementing curricular adaptations. Both Chow et al. (2023) and Negash & Gasa (2022) assert that teacher training is vital for developing curricular adaptations and ensuring the proper performance of students with disabilities. While Chow et al. (2023) focus on the necessity of teacher training to enhance the education of individuals with disabilities, Negash & Gasa (2022) emphasize that the absence of teacher training can be seen as a barrier to the educational development of impaired students. This aligns with the findings of Triviño-Amigo et al. (2022), who conclude through a survey of teachers from public schools in Spain that initial teacher training is inadequate. It highlights the need for specialized training, which positively assists students with visual impairments.

Moreover, practical teacher training helps educators understand the situation and enhance their attitude toward inclusion. Jury et al. (2021), point out that teacher training allows teachers to see educational inclusion more favorably. San Martin et al. (2021), in a study developed in Chile, found that the correct preparation of teachers in inclusive areas will foster their comprehension of their students' difficulties and with the necessary tools, work with them positively. For that reason, an in-service training technique that aligns with inclusion is implemented to help teachers become good instructors for their students with SEN. Kivirand et al. (2021) state that this technique allows teachers to identify the priorities in and out of the school, fostering the team working with other colleagues to implement inclusive education in the

institutions. One of the disadvantages is the lack of support that scholar authorities provide to teachers in institutions to achieve correct performance with their impaired students. Maebana & Molotja (2023) suggest that the lack of school managers' support is one of the leading causes of ineffective in-service teacher training.

Furthermore, teacher training in EFL contexts is crucial. "Professional EFL teachers require subject matter competence, social competence, personal competence, and pedagogical competence." (Effendi et al., 2021). In Ecuador, the situation is similar, as the lack of teacher training is viewed as a negative aspect of inclusion. In this context, Guanoluisa et al. (2022) found in their research conducted in Ecuadorian public schools that teachers are not adequately prepared to meet the needs of visually impaired students, particularly in training on the braille system and awareness of various assistive technologies. Additionally, according to Parraga-Sánchez (2023), an examination of Ecuadorian laws and constitutional guarantees reveals a disparity between what the Ecuadorian educational system claims and the actions taken by different institutions to promote educational inclusion, which remain inadequate. Supporting this research, Coellar Orellana (2021) emphasizes that the lack of teacher training within the Ecuadorian educational system negatively impacts the participation and engagement of individuals with visual impairments in classroom activities.

1.8 Visual Impairment

Visual impairment refers to the partial or total difficulty individuals face in using their vision. According to the World Health Organization (2019) and the

Centers for Disease Control and Prevention (2020), visual impairment ranges from mild vision loss to complete blindness, with a low likelihood of addressing the issue. Visual impairments are not uncommon. For example, the World Health Organization (WHO, 2023) reports that 2.2 billion people worldwide experience visual impairment. (World Health Organization, 2023). This condition can affect individuals differently, presenting challenges in developing educational activities. “Their access to courses and, subsequently, career opportunities were found to be restricted by a combination of systemic exclusion, lack of information, internalized oppression, pedagogy, and employment prospects." (Palan, 2021). Nonetheless, each country strives to provide the right to free education, as would be afforded to all individuals, promoting inclusion. The United Nations asserts that everyone has the right to free education, encompassing elementary and fundamental stages.

Furthermore, Ecuador has demonstrated recent statistics regarding disabilities. According to the National Council for Disabilities (CONADIS), approximately 3.01% of the population in Ecuador has some form of disability, amounting to around 540,650 people (Edición Médica., 2023). Additionally, the National Institute of Statistics and Census (INEC) reports that 7 out of every 100 individuals experience functional difficulties in carrying out their activities, representing 1,009,435 persons aged 5 years or older (Ecuador en Cifras., 2023). The country has a legal framework supporting people with disabilities and their rights, defined by the organic law on disabilities, which was updated by the national assembly in 2012. The National Assembly of Ecuador (2012) developed the organic law on disabilities, which states that individuals with

disabilities are entitled to equal opportunities, to live free from discrimination, and to be fully included in society.

METHODOLOGY

This chapter outlines the methodology used to explore the role of assistive technologies in teaching English as a foreign language (EFL) to visually impaired students at Liceo Panamericano in Guayaquil. The study aims to address the following research questions:

- What teaching strategies and assistive technologies are currently employed by educators to support visually impaired students in learning EFL at Liceo Panamericano in Guayaquil?

- How do specific assistive technologies enhance the learning outcomes of visually impaired students during English as a Foreign Language (EFL) classes at Liceo Panamericano in Guayaquil?

1.9 Design

This project employs an exploratory approach in its design, which serves as an essential tool for investigating and documenting the role of assistive technologies in the education of students with visual impairments in a school in Guayaquil. Elman et al. (2020) suggest that exploratory research is considered the center of well-structured research because it guarantees a more detailed discovery of new information.

Exploratory research aims to develop an in-depth understanding of this underexplored topic. Mbaka & ISIRAMEN (2021), along with Haile (2023), agree that exploratory research is conducted when there is insufficient

knowledge about the topic, allowing for the formulation of tentative theories to assess the research's feasibility.

Additionally, a qualitative methodology is utilized alongside exploratory research to thoroughly understand the challenges and experiences faced by teachers and visually impaired students during the teaching-learning process. Creswell & Creswell (2022, #) emphasize that a qualitative method concentrates directly on the meanings that participants attribute to the research rather than the researcher’s perspective. This information aligns with the present study, where the participants play a crucial role. Busetto et al. (2020), along with Lim (2024), share the view that qualitative research is a process that involves understanding social phenomena by resolving questions such as what, where, when, who, and how, by analyzing interactions and social behaviors. Additionally, Makri & Neely (2021) emphasize the importance of combining qualitative research with an exploratory approach, indicating that these types of studies are developed to explore complex areas that have not been analyzed in depth.

This study combines both exploratory and qualitative research designs to investigate the role of assistive technologies in the education of visually impaired students. It also provides an in-depth understanding of the challenges and real experiences teachers and students face during the teaching-learning process. This methodological combination offers a more comprehensive perspective on how assistive technologies are integrated into EFL instruction at a school in Guayaquil, revealing valuable insights into their effectiveness, limitations, and areas for improvement.

Integrating these two methodologies aims to generate reasonable insights into the implementation and impact of assistive technologies. This will pave the way for developing more inclusive and effective teaching strategies tailored to the needs of visually impaired EFL students, which could be strictly related to technological fields.

1.10 Participant

The research sample consisted of one visually impaired student, aged 16 to 17, completing their second baccalaureate at Liceo Panamericano School. This student receives seven hours of Language Arts instruction each week. The researcher observed the student's performance in each class to comprehensively understand the factors influencing their learning outcomes.

1.11 Instruments

The researcher used the following instruments to answer the two research questions: 1) What teaching strategies and assistive technologies are currently employed by educators to support visually impaired students in learning EFL at Liceo Panamericano in Guayaquil? 2) How do specific assistive technologies enhance the learning outcomes of visually impaired students during English as a Foreign Language (EFL) classes at Liceo Panamericano in Guayaquil?

To address the first research question, the researcher interviewed the teachers to gain insights into their strategies and technologies used in EFL instruction. Additionally, the researcher utilized classroom observations to examine the

real-time implementation of these strategies and technologies during the lessons.

The researcher also interviewed the visually impaired student to address the second research question: How do assistive technologies enhance the learning outcomes of visually impaired students in EFL contexts? This interview examined the student's experiences with assistive technologies and their perceived effect on learning outcomes.

The researcher also employed a classroom observations checklist that helped assess how assistive technologies are used during lessons and their effects on student engagement and participation.

1.12 Data Collection Analysis

One visually impaired participant in the second baccalaureate program at Liceo Panamericano School in Guayaquil participated in this study. Data collection occurred in December, including interviews with the teachers that provided qualitative insights into their perceptions of assistive technologies. The gathered data were analyzed concerning the research questions outlined below:

RQ#1: What teaching strategies and assistive technologies are currently employed by educators to support visually impaired students in learning EFL at Liceo Panamericano in Guayaquil?

RQ#2: How do specific assistive technologies enhance the learning outcomes of visually impaired students during English as a Foreign Language (EFL) classes at Liceo Panamericano in Guayaquil?

PROTOCOL

Following institutional review board approval, the researcher obtained formal permission from the school administration to conduct the study. Subsequent to securing this authorization, the researcher commenced the data collection process, initiating unstructured classroom observations as initially planned.

To gain a comprehensive understanding of the student's experiences, the researcher engaged in preliminary discussions with the student to identify key challenges encountered within the classroom environment. Building upon these initial conversations, a formal interview was conducted. This interview comprised six predetermined questions designed to elicit information regarding the student's utilization of assistive technologies, perceived obstacles to learning, and suggestions for improvement.

Furthermore, the researcher conducted interviews with the visually impaired student's instructors. The primary objective of these interviews was to investigate potential variations in the application of assistive technologies across different subject areas and to evaluate the perceived impact of these technologies on instructional delivery. The interviews aimed to ascertain the effectiveness of assistive technologies in facilitating the learning process for students with visual impairments.

Finally, the researcher undertook unstructured observations of a regular English class at the second baccalaureate level, in which the visually impaired student was fully included. These observations sought to document the

student's academic performance and identify factors that impeded her complete integration.

RESULTS

Theoretical Foundations of English Teaching by Using Assistive Technologies for Visually Impaired Students

Using assistive technologies to teach English as a foreign language (EFL) to students with visual disabilities essentially focuses on different theories that address the acquisition of knowledge and language learning and the integration of diverse technological tools adapted to their primary necessities and requirements.

To start, the approach involves multisensory learning. This theory uses different senses that interconnect to enhance and facilitate the inclusion of a second language for visually impaired students. It is known that visually impaired students depend heavily on their other senses, such as touch and hearing. Technological tools that convert text into audio and options like screen readers and text-to-speech programs are essential for creating an inclusive environment. The theory of multiple intelligences is often linked to this approach because it emphasizes the importance of personalizing the learning process according to each classroom member's diverse styles, learning needs, and cognitive abilities. In this context, the role of assistive technology is crucial as it ensures the adaptation of materials to meet the needs of students with visual impairments, helping to achieve learning goals based on the dominant type of intelligence, whether kinesthetic, auditory, or tactile.

The theory related to emotional intelligence portrays how the learning process is closely connected to emotional management. At this point, the use of assistive technologies for students with visual disabilities creates a positive environment and helps reduce stress and anxiety. Moreover, active participation develops as a result of using assistive technology. For instance, Martorell proposes the theory of generative voice, which suggests that learning English should be a motivating and immersive experience responsible for leading students toward a more natural method of English acquisition, avoiding constant translation.

Additionally, this holistic approach is supported by the constructivist theory proposed by Piaget. This theory highlights the priority that active participation hinders students' learning process. Assistive technologies foster meaningful learning by offering different strategies to help students understand English content through accessible tools.

1.13 Unstructured Classroom Observations

The observational study, conducted over three sessions, evaluated the role of assistive technologies in facilitating English as a foreign language (EFL) instruction for a visually impaired student at Liceo Panamericano School Guayaquil.

Contextual Overview and Observation Setting

The observations occurred on December 12 and 19, 2024, and January 9, 2025. The first two sessions lasted 40 minutes, while the third observation lasted 80 minutes. The participant, a visually impaired student, was in their second year of the International Baccalaureate program and attended classes in English as a Foreign Language (EFL), History, Theory of Knowledge, and Visual Arts. The participant is the sole student with a visual impairment in the classroom.

The student used her laptop as the principal assistive tool to work in class. This portable computer had JAWS (Job Access With Speech) software installed, which enabled her to access to the digital learning material provided. However, technological tools available in the classroom like projectors and virtual whiteboards were not readily accessible, due to the lacked screen reader support, significantly restricting the student's autonomous accesibility.

The objective of the Observation

The main objective of these observations was to evaluate the incorporation of assistive technology into EFL lessons and the strategies used bby the teachers and school to support the visually impaired student's learning process within an International Baccalaureate program framework.

Instructional methodologies and Assistive Technology Integration

Several strategies were applied by the teacher, including collaborative learning, teamwork, auditory learning, and universal learning design (UDL), to supply the visually impaired student's necessities inside the classroom. Due to the difficulties in the access and the incompatibility that digital textbooks present, teachers rely on Google Docs to provide accessible documents, readable for her through the usage of the screen reader. The participant presents a limited proficiency in braille reading-writing mechanisms, what causes her strict dependence on JAWS for reading assignments and texts. Furthermore, the incorporation of podcasts is seen by the teacher as a useful tool to help the student develop comprehension and listening skills. One of the strategies To foster teamwork is the usage of accessible games, which let the interaction and engagement of both visually impaired and sighted peers.

Key Findings of the Observation

The observations shows that JAWS is the screen reader in which the student relies on to develop her classroom activities. This assistive technology works in conjunction with google docks, which facilitates the completion of assignments.

Difficulties and Barriers

The screen reader presents shortcomings in reading English texts, which represents a negative effect in student's comprehension of the content, and leads to delays in completing reading assignments effectively.

For instance, while her classmates progressed to Chapter 10, the student remained focused on Chapter 5 of a reading activity. Furthermore, some difficulties were faced by Both the teacher and the student, regarding the accessibility of specific technologies; for example, Google Docs read aloud content in Spanish instead of English.

Student engagement

The student showed active participation in classroom activities; however, during the third observation, she displayed reluctance to present her task orally in front of her teacher and peers, possibly due to anxiety and nervousness. Despite this hesitation, she completed assigned tasks in an effective way and took part in oral presentations and debates. The teacher observed improvements in her grammar and speaking skills, highlighting her strengths in verbal communication and an improvement in thee usage of high level words and idiomatic expressions.

1.14 Qualitative Data from Interviews with the English Teachers

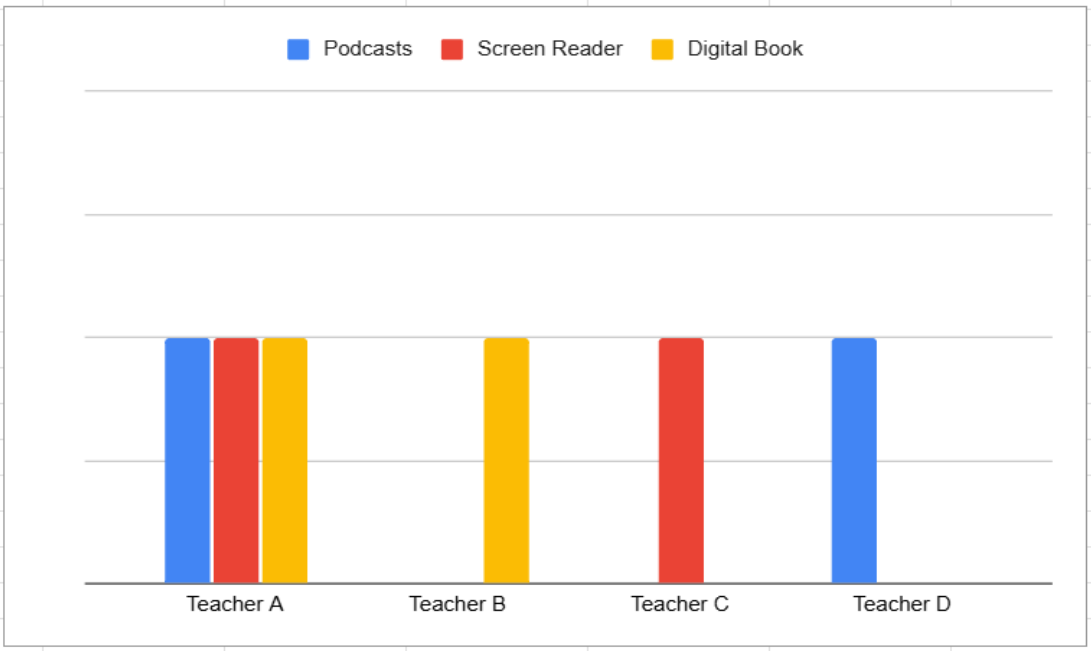
As an essential part of this study, the researcher conducted unstructured interviews with four English educators who teach different subjects at the school where the study occurred. The interviews aimed to explore their teaching strategies, the assistive technologies currently employed by educators to support visually impaired students in learning EFL at Liceo Panamericano in Guayaquil, and the challenges they have faced in assessing students with visual impairments.

The educators also shared their perspectives on how effective these assistive tools and proper teacher training can be in developing their daily lessons.

The following are the explanation of each of the questions asked to the teachers.

What assistive technologies do you use in your classroom for visually impaired students (e.g., screen readers, Braille displays)?

Figure 1. Assistive Technologies



The following chart shows the results from teachers taken from the common variables in the accomplished interview. It highlights that Teacher A is the only teacher using three different assistive technologies while teacher B only uses digital books. In addition, Teacher C focuses on the Screen Reader usage and the Teacher D implements podcasts in the learning sessions.

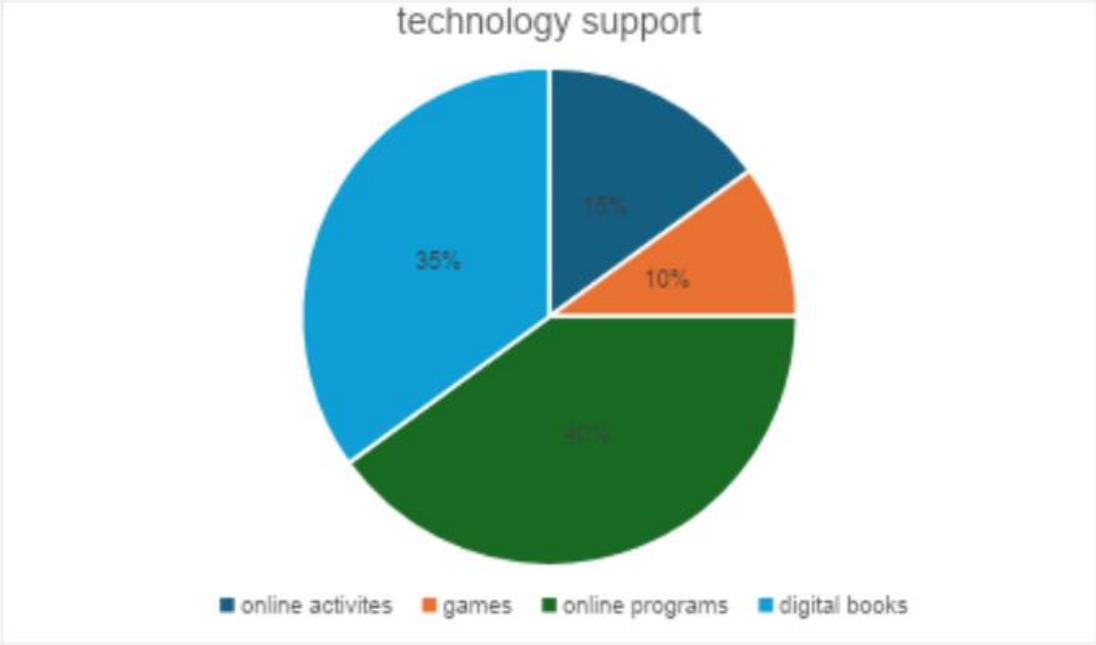
Qualitative Unstructured Field Note: Question 1

Teacher A *English Subject*	The teacher A, which is the teacher of the English subject, stated that she used different types of assistive technologies, along with her classes. She mentioned the great help that **podcasts** have given to her, especially to practice listening comprehension with her student which in this case is only one. Another assistive technology is the program that she uses which is Jaws, a **screen reader** which reads everything that she put digitally for her in order to work along the class. But as the student is not really good at listening, there are also some **digital books** that must help with that, so she can use them to read and improve comprehension questions and to look for information.
Teacher B *Theory of Knowledge*	The teacher B, who is the teacher of the Theory of Knowledge subject, stated that he uses the laptop and does the information in electronic way, in a file. Also he stated that the student can read and basically listen from an application that she has on the computer, and then the usage of **digital books** becomes essential. That's the way that he does this, and

	basically his lessons, his subject is about discussing, so speaking skills are the ones getting sharpened.
Teacher C *History*	The teacher C, who is the teacher of the History subject, stated that for activities that require seeing images, there is a program called Jaws, that works as a **screen reader** that describes what is written on the screen. It helps him to get the images into words or audios.
Teacher D *Visual Arts*	The teacher D, who is the teacher of Visual Arts, stated that she works with textures like clay and aluminium paper. This subject is very practical, it is much more practical than theoretical, but for theoretical things she uses the student videos in English and some lectures from **podcasts**.

How do these technologies support the learning process for your students? Can you provide specific examples?

Figure 2. Technology support



The following chart shows the results from teachers taken from the common variables in the accomplished interview. It highlights Online Programs and Digital Books are the ones used the most by teachers A, B, C, D; 40% and 35% respectively. Followed by Online activities with a 15% and Games with 10% from the total.

Qualitative Unstructured Field Note: Question 2

Teacher A *English Subject*	The teacher A, which is the teacher of the English subject, stated that each student is a different world, and in this case, her impaired student didn't have a very good knowledge of Braille, which made it very difficult to work with her using Braille for many reasons. She explained that it wasn't only because the student lacked a strong knowledge of Braille, but also because the teachers were not trained to work with Braille. She also mentioned that some of the apps they had used at the

	beginning of the school year now required a payment, making them less available to use. The teacher stated that technology had been a great support for her, and she couldn't imagine what she would have done without online activities, games, books, and programs. She emphasized that these tools were crucial in teaching her student everything in the curriculum throughout the school year, and it was really a huge advantage to have technology available in this special case.
Teacher B *Theory of Knowledge*	The teacher B, who is the teacher of the Theory of Knowledge subject, explained that when they had a knowledge lesson from the theory of knowledge, her student had to listen to the question many times because she needed to reflect on it and connect it to the different perspectives for answering it. He mentioned that she had to consider all the knowledge she had and relate it to the different contents. The teacher pointed out that, for this reason, with technology, she had the chance to listen to the question repeatedly, which helped her connect and discuss, and that was the way she worked.
Teacher C *History*	The teacher C, who is the teacher of the History subject, stated that said that technology helps her student see, understand, and comprehend the information, so they can start analyzing it. He explained that in his subject, he tries to analyze historical events alongside present situations in order to gain a better understanding of the whole scenario. He gave an example of

	her student, who cannot see, and mentioned that she uses her computer. He sends her the information, and she has a program that reads it aloud for her. After listening, she understands the specific topic, and then it becomes easier for her to answer the questions.
Teacher D *Visual Arts*	The teacher D, who is the teacher of Visual Arts, explained that technology was very important for her student because she has her own computer. She mentioned that with the artistic videos and explanations, these videos provide very specific and clear instructions on how to create art, as well as examples of blending artists from around the world. She emphasized that this was very important for her.

What specific teaching strategies do you employ when teaching English to visually impaired students?

Figure 3. Teaching strategies

The following chart shows the results from teachers taken from the common variables in the accomplished interview. It highlights that Teachers A, B, C and D will firmly prefer to use dictation with a 60% of preference as a teaching strategy in the learning sessions. Meanwhile, Oral report is the other strategy followed with a 30% of preference. Book reports is the least teaching strategy used by the teachers portrayed by the 10% of preference.

Qualitative Unstructured Field Note: Question 3

Teacher A *English* *Subject*	The teacher A, which is the teacher of the English subject, explained that she used a lot of strategies because her student was part of the whole group, and she didn't make a big difference in what the student could do compared to the other students. She treated her as part of the class all the time. One of the strategies that helped not only her but the entire class was dictation. The student was not used to this at first, but with

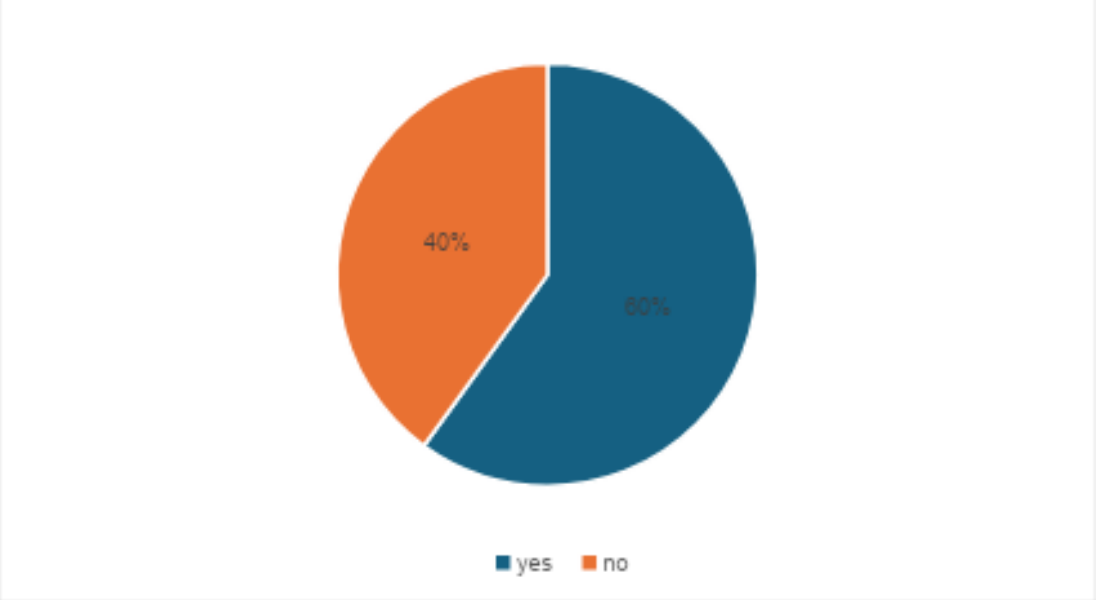
	time, they could do it faster. Another strategy was giving extracts of books, stories, or texts and asking for their opinions, like giving a book report. This helped the students express themselves more, and in her student's case, she could now give oral presentations in front of the class without any problem, as she had been used to doing these activities. The teacher also mentioned that she asked not only comprehension questions while reading but also asked her student to imagine a different ending, or what she would have done if she were the character of the story, or what she thought about the text. These cognitive questions helped her analyze the material and gave her a broader perspective on the topic. The teacher had also tried describing images to help her student give her opinion, but this method didn't work, so she stopped. She also used physical materials so that her student could touch and describe textures, sizes, and shapes. The teacher noted that her student had done well so far and was now able to fill in the gaps, match ideas, and recognize which word best fit the context. The teacher expressed pride in her student's progress and mentioned that she had used these strategies to help her succeed.
Teacher B *Theory of*	The teacher B, who is the teacher of the Theory of Knowledge subject, explained that something important to note was that

Knowledge	his student knew how to use technology and how to type, which made all the other strategies easier. He gave the example that when they needed to write or gather information, it was easy for her to use the keyboard, and that wasn't a problem for him, as it would have been more difficult to manage the production otherwise. Regarding oral production, the teacher said that she could speak in English during reflections because, as he mentioned, his lessons were focused on reflection, discussion, and debates. He emphasized that his subject required critical thinking, and the strategies they used included discussions and debates.
Teacher C *History*	The teacher C, who is the teacher of the History subject, mentioned that when it came to strategies, reading aloud and making comments about the kind of information were helpful. He also noted the importance of pair work because when his student tried to work alone, it was quite difficult for her.
Teacher D *Visual Arts*	The teacher D, who is the teacher of Visual Arts, explained that she used lectures and the computer as part of her teaching strategy. Her student had a screen reader and an assistant on the computer, and she brought short English lectures for her student to practice with. The teacher noted that she didn't focus too much on the English part, as it was more practical. She highlighted that visual arts were freer, without specific

	themes, and this was particularly important for her visually impaired student. It allowed them to explore more options in creating art. For her student, art was not visual, but rather a more sensitive form of art, as she worked with her hands and textures. The student worked with clay, essences, and paints, including essences from flowers and fruits, and used these to recognize colors. Regarding evaluations, the theoretical part was done on the computer with the student using her screen reader. For the practical part, she read the instructions on the computer and then started working. The teacher shared an example from the last test, where the student used aluminum paper and worked properly. The student didn't like working with glue, so they used staples instead, and she had no problem with that. The teacher mentioned that they were now working with sculpture in an expanded field.

In your experience, how effective are these assistive technologies in enhancing the learning outcomes of visually impaired students?

Figure 4. Effectiveness of the assistive technologies



The following chart shows the results from teachers taken from the common variables in the accomplished interview. It highlights that the majority of teachers represented with 60% strongly agree on assistive technology as a way to enhance the learning outcomes of visually impaired students. Meanwhile, the 40% shows that some teachers would turn down the statement.

Qualitative Unstructured Field Note: Question 4

Teacher A *English* *Subject*	The teacher A, which is the teacher of the English subject, explained that, in her view, technology was about 50% effective. She noted that when teaching a visually impaired student, technology couldn't do everything. She emphasized that 50% of the effectiveness relied on the teacher, the support

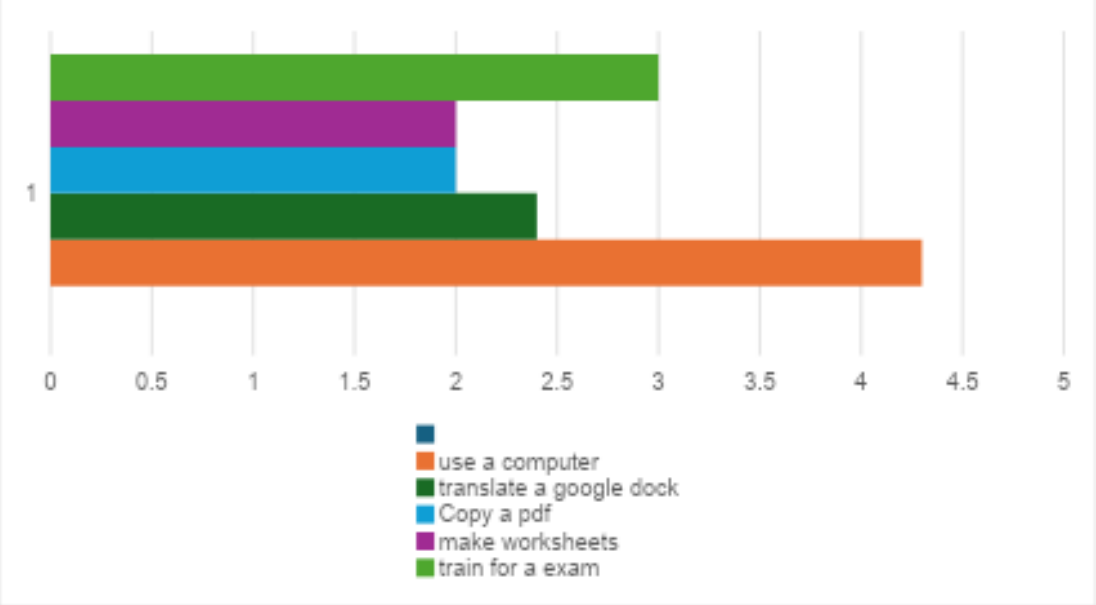
	provided, and the collaboration with the family, while the other 50% depended on the media and resources the teacher used to help the student learn. In this particular case, she mentioned that technology was very effective. The student had improved a lot and learned a great deal, now using idiomatic expressions and high-level words most of the time in her activities. However, the teacher pointed out that this progress was also due to the help behind the activities, including corrections, feedback, and the conversations they had with the student after each activity, presentation, or lesson, whether written or oral. She stressed that these factors were key to the student's learning and reiterated that while technology was effective, it was not everything.
Teacher B *Theory of Knowledge*	The teacher B, who is the teacher of the Theory of Knowledge subject, explained that it's important to remember that they are not perfect. He mentioned that when his student writes in Braille, she sometimes makes mistakes and may not be aware of them. However, when she uses technological assistance, like the computer, she can see or understand if she made a mistake, which is very helpful because once you know where the mistake is, you can correct it. He shared that he knows Braille, though he sometimes forgets it because he doesn’t use it every day. He pointed out that when you don’t use something regularly, you tend to forget it. Nevertheless, he emphasized

	that he knew how to write Braille and even taught it to first-year students because it's important to understand inclusivity and learn these strategies. In his subject, he explained that they apply Braille whenever possible, as the focus is on discussion and connecting different perspectives. He said that understanding different perspectives and realities allows for empathy, which helps in comprehending others' views.
Teacher C *History*	The teacher C, who is the teacher of the History subject, explained that, as he had already mentioned, technology helps his student because it allows her to understand a lot. He emphasized that teacher assessment is very important because sometimes the program she uses is not very dynamic. He said that when teacher assessment takes place, it becomes crucial. The teacher noted that technology contributes a great deal because it helps her stay concentrated. He pointed out that, in this school, teachers of students with these kinds of needs treat them as part of the class rather than separate. He stressed that these students truly need a teacher who assesses and helps them, as it takes much time for teachers to learn the technology or devices that can be of great help. He explained that with the proper management, teachers can distribute time and dedicate enough attention to each student because all students have their own needs.

Teacher D *Visual Arts*	The teacher D, who is the teacher of Visual Arts, explained that while technology is very important, it is not everything. She noted that in the case of her student, she sometimes gets distracted by these tools. The teacher mentioned that, for her, it is helpful to start the class by grabbing her student's attention with videos and readings, and then continue with the practical part of the lesson. She said that if she were to grade or give a score to the role of technological tools in her subject, she would rate it at 70%.

What challenges have you encountered when integrating assistive technologies into your teaching, and how have you addressed these challenges?

Figure 5. Challenges



The following chart shows the results from teachers taken from the common variables in the accomplished interview. It highlights that the majority of teachers stated that computer usage is the main boundary followed by the exam training. In addition, the translation of a google document is still a challenge but with less intensity than the previous mentioned. Making worksheets and copying a document are also challenges mentioned but not that harsh to overcome.

Qualitative Unstructured Field Note: Question 5

Teacher A *English Subject*	The teacher A, which is the teacher of the English subject, explained that one of the main challenges she had encountered was the limited resources available for people with visual impairments. She pointed out that, to be honest, there are not as many technological tools for blind people as one might wish, and some of them require payment, making them inaccessible for people with low incomes. She mentioned that, at times, she had found fantastic resources that could help her student learn a lot, but they were not compatible with the program the student used on her computer. To solve this, the teacher would translate the material into a Google Doc, rewrite some parts, or use technology to copy the content. For instance, the computer her student used couldn't read PDFs, so she would copy and paste the content from the PDF into a Google Doc and create worksheets for her. She made the

	books available in Google Docs as well, so the computer could read to her student, allowing her to complete the activities. The teacher gave an example of a challenge she overcame with her student while preparing her for the A2 exam (KET, Key for Schools). At first, her student couldn't manage it, but the teacher converted PDF examples from the internet into Google Docs, and her student was able to answer the questions. She was fascinated by how her student managed to complete it in less time than she had expected, thanks to practice. The teacher concluded that this was the method she had used to teach her student so far, and she believed the results had been good.
Teacher B *Theory of Knowledge*	The teacher B, who is the teacher of the Theory of Knowledge subject, The male teacher explained that it's a bit challenging when reading in a visual way because there are strategies like skimming and scanning that allow you to quickly get a general idea of the information. However, for a student with visual impairment, it's different because she has to listen to all the information or the entire question before giving an answer. This means that the process takes more time. He pointed out that this requires more time, and added that they don't work with just one student with a visual impairment but with a full classroom of 30, 40, or even 60 students, which makes it

	challenging to balance the time each student needs. For example, a student with visual impairment may take longer to write or read something compared to a regular student. The teacher emphasized that teacher training is very important, especially when trying to foster broader thinking about the world. He explained that in order to be human, we must recognize that everyone is different, and inclusivity plays a key role in understanding these differences. He firmly believed that training in these situations is essential, such as training in Braille or sign language. He mentioned that it's not just about students with visual impairments, but also about students with hearing problems and other disabilities.
Teacher C *History*	The teacher C, who is the teacher of the History subject, shared that he hasn't found enough devices or applications to effectively teach his subject. He explained that the applications he has found have limitations, with some only being reading applications and others only assisting with listening. He mentioned having issues with these devices, as they create problems for acquiring new knowledge. This, he said, is one of the challenges, especially since everything seems to be based on listening. He highlighted that students need a deeper understanding of English in order to grasp specific terms. To address this, he tries to simplify the way the information is

	explained and produce specific terms in a way that is understandable for his student, but he noted that this takes time. The teacher also mentioned that he manages the time in such a way that his student can feel included in the class. However, he pointed out that teacher training on this matter is quite poor. He admitted that he hasn't encountered any specialized courses on teaching students with visual impairments, so he isn't sure if they are available. As a result, he has had to rely on searching for solutions on the internet.
Teacher D *Visual Arts*	The teacher D, who is the teacher of Visual Arts, explained that there are many challenges, but the most significant ones are related to the theoretical part of the subject. She mentioned that theory is very substantial, and it is particularly tiring for her student to understand all the information. Another challenge she faces is with painting in the second dimension because her student doesn't have limitations on the areas to paint, yet she requires constant assistance and instruction from the teacher to complete classwork. The teacher noted that she struggles to find enough information on websites or digital platforms that could help her student with classwork adapted to her needs. Instead, she has to adapt the standard classes and materials to her student's condition.

	Regarding teacher training, the teacher shared that she hasn't received any formal training in this area within the school. However, during her university internships, she had the opportunity to work with students with this kind of disability, which gave her some experience, but not enough. She acknowledged that she has learned by working directly with her student. The teacher emphasized that it is necessary to apply more training for these specific conditions, especially in a subject like visual arts. She expressed dissatisfaction with the current approach of separating the student from the regular classroom content or adapting the subject to topics that are easier or more accessible for her. She mentioned that she wouldn't want to continue this method of isolating the student from the regular content. However, she admitted that, due to her lack of complete training, she hasn't been able to focus on her student's condition in the right way. The teacher considered the option of offering extracurricular classes, but without separating her student from regular classroom activities. She clarified that she didn't mean that teachers were intentionally separating the student, but rather that, in her case, she had to separate the content to make it accessible to her student.

Findings from the interviews

Understanding and usage of assistive technologies

The four teachers showed reliability and familiarity with the technological tools. They considered them helpful in helping students with visual disabilities to acquire knowledge. Two teachers discussed using Jaws as the screen reader to work on classwork and evaluations. Meanwhile, the other two teachers pointed out the occasional usage of a braille machine and braille displays. Despite their ability to handle assistive technologies, three expressed that they haven't received any instruction or teacher training related to using these technologies and their application to the classroom. They indicated that their acquisition of knowledge about these tools and devices is autodidactic, acquired through a personal effort.

These participants agreed to incorporate these assistive technologies into their daily lessons. However, they highlighted their challenges, such as limited access to updated devices and occasional technical issues. One of the teachers emphasized the need for teacher training and formation to apply assistive technologies in their classrooms properly.

Effectiveness of assistive technologies

Regarding the effectiveness of the technological tools, the four teachers demonstrated positive outcomes in the facilities they provide for acquiring knowledge related to English learning.

One of the teachers pointed out that screen readers help visually impaired students enhance their listening and speaking skills. On the other hand, a teacher expressed that braille resources are necessary to develop reading and writing skills. Some limitations were identified, such as the lack of attractive and accessible materials adapted to EFL and the necessity of interactive functions.

Teaching-learning strategies integrated with assistive technologies

The teachers described some strategies for integrating assistive technologies in their lessons. One of the most common strategies mentioned was collaborative learning, where students with visual impairments practice group work with their peers. Three of the teachers highlighted the application of multisensorial strategies. For instance, they portrayed auditory resources in combination with tactile inputs to enhance the understanding and acquisition of information.

In addition, one of the teachers informed the researcher about the importance of role-playing activities based on dialogues to practice conversations in English. This teacher suggested that screen readers are a fundamental tool for developing these strategies because students can read what is asked to speak. Another teacher shared a plan that involved constructing narrations and the usefulness of audio descriptive material to enhance vocabulary retention and listening skills.

Perceptions and challenges faced by teachers

The interviews revealed not only a shared commitment among the teachers to support the visually impaired student during the learning process but also some difficulties. The most mentioned themes were insufficient teacher training and a lack of resources. One of the teachers pointed out the strong necessity of institutional support, indicating that the most common solution is to look for external resources or rely on trial and error.

In addition, two teachers expressed that the physical setting of the classroom complicates the use of technological tools. Spaces at school are not explicitly designed enough to satisfy the needs of visually impaired students. Another educator focused on creating a more inclusive environment where all students feel integrated.

Preliminary recommendations for improvement

Some recommendations have arisen based on different teachers' perspectives. The participants strongly emphasized the usefulness of workshops centered on how to use and integrate each type of assistive technology in regular classrooms. One teacher also suggested creating a repository focused on planned lessons and resources necessary for helping students with visual disabilities.

Then, three teachers agreed on the importance of having ease of access to different technological devices. One of the teachers proposed to find different assistive technologies at a reduced cost.

Ultimately, the four teachers supported the idea of maintaining constant dialogue with the families of visually impaired students, as well as scholar administrators and coordinators to create a supportive network that can help students with visual disabilities achieve their learning goals. They highlighted that a collaborative approach is as essential as teacher training to enhance these students' learning experiences.

The researcher conducted an unstructured interview with the English teacher at the school where this study occurred. The interview aimed to explore the teaching strategies and assistive technologies currently employed by educators to support visually impaired students in learning EFL at Liceo Panamericano in Guayaquil.

1.15 Qualitative Data from Interview with the Visually Impaired Student

The results showcased her reflections and perspectives related to her EFL learning process, as well as her analysis about the role that assistive technologies play in the development of this process. Some experiences, challenges and positive outcomes were identified by using these tools in their daily education.

Background Information

Can you describe your experience with learning English as a Foreign Language?

Visually Impaired Student	The student explained that learning English is a new area of exploration for her because it involves many methods combined to develop the ability to express herself. She

	mentioned that she first started by listening to audios or songs in English, and then her computer began to read the lyrics of the songs or the subtitles of videos she listens to. She explained that she tries to relate the things she hears with the things she reads.

What is your current level of proficiency in English, and how did you reach this level?

Visually Impaired Student	The student shared that she considers her English level to be intermediate, as sometimes she doesn't have the exact way of expressing herself. She explained that her English isn't very strong.

Use of Assistive Technologies

What specific assistive technologies do you use in your EFL classes?

Visually Impaired Student	The student mentioned that she uses the screen reader on her computer, called Jaws, which reads everything in English. She also mentioned using Google Translator, but not to translate things. Instead, she uses it to input the text she wants to listen to, so she can learn how to pronounce it. She noted that this app helps her pronounce words much better than the screen reader on her computer.

How did you learn to use these technologies? Were there any challenges in learning to use them?

Visually Impaired Student	The student emphasized that, in general, using the computer has been a big challenge for her. She struggled with things like how to turn it on or off and how to navigate the internet. She found it stressful because she had heard that many of her friends with the same condition were able to use it very well. She felt frustrated but, with the pandemic, she started to slowly explore each key on her computer and learn how to use it. She shared that in the past, her teachers couldn't connect with her or explain things in a way that made sense. She learned to use the computer on her own, describing it as an adventure. The computer teachers she had previously also struggled to connect with her and explain how to use it correctly. Her main goal was to immerse herself in that world, aiming to have a more updated perspective, similar to people her age who have the same condition.

Can you describe a typical lesson where you use assistive technology? How does it help you during the lesson?

Visually Impaired Student	The student explained that using the computer is more useful for her when it comes to English, because English

	has many areas, and she needs the assistance of her computer to complete these tasks. She mentioned that it is a very complex process. For example, she started by listening to the audio provided by Cambridge and answering the questions using both her screen reader and the audio recorder. She noted that for this activity, she needs to concentrate fully and avoid distractions, which she finds very difficult.

Impact on Learning

In what ways do you feel that assistive technologies have enhanced your learning experience in EFL?

Visually Impaired Student	The student explained that assistive technology is more useful to her in listening and reading, as these are the areas where she relies the most on tools like the screen reader on her computer and the recordings provided by Cambridge. She shared that her experience with this technology is positive and that it helps her completely in these two areas. However, she mentioned that she doesn't find it necessary to use the computer for writing. For reading, she faces a challenge with the speaker currently being in Spanish, as the app doesn’t pronounce the words completely well, making it very difficult to understand some of the information in the text that isn’t clear enough.

Have you encountered any difficulties or limitations while using assistive technologies in your language learning? If so, can you elaborate on these experiences?

Visually Impaired Student	The student explained that her difficulty lies in the barriers of pronunciation when she wants to learn a new language. She shared that's the reason why she prefers her teachers to read everything to her, as they pronounce things better.

How do you think assistive technologies compare to traditional methods of learning English for you?

Visually Impaired Student	The student explained that learning a language entirely in braille is very different, as it makes it difficult to develop skills in areas like listening and speaking, since these are not experienced through braille. She shared that she has come to the conclusion that a unified learning approach, using both braille and assistive technology, can complement each other and enhance learning.

Interaction and Support

How do your teachers support you in using assistive technologies during EFL classes?

Visually Impaired Student	The student explained that her teachers provide her with the files or activities she needs to solve, and she simply uses assistive technologies to complete them. She mentioned that she receives assistance from her teachers when she has difficulties or when she doesn't understand something her screen reader is saying. Additionally, when she is writing and her computer isn't reading or pronouncing exactly what she wants or thinks she is writing, she seeks help from her teachers.

Can you share an example of how a teacher has adapted their teaching strategies to accommodate your needs as a visually impaired student?

Visually Impaired Student	The student explained that she uses an audio recorder and transcribed documents in Google Docs. She also mentioned that they use a large speaker to listen to audios or readings when her computer isn't able to help her. She shared that it becomes complicated when the computer switches to a mode in which she cannot read or do anything, and she has to find another way to access the information.

Personal Reflections

What strategies do you find most effective for your language acquisition, and how do they integrate with the assistive technologies you use?

Visually Impaired Student	The student explained that for learning a language, one strategy is to repeat vocabulary, high-level words, and idiomatic expressions. She mentioned that assistive technology helps her pronounce words exactly, and the computer also tells her if she is making a mistake, something that the traditional method does not allow her to do.

How do you feel about your progress in learning English with the help of these technologies? What are your future goals in language learning?

Visually Impaired Student	The student shared that she feels great and very happy because when she looks back, she remembers being lost in 8th grade when it came to learning English. At that time, she didn't know where to start. She mentioned that Liceo Panamericano had implemented a language acquisition program for students from a young age, but she wasn't part of it when she began her studies. She didn't receive the attention she required, and when she entered high school, she reflected on why she hadn't learned English before. That's when technology began to help her. She

	listened to her teachers, but also used technological methods. At first, she started learning English slowly by listening, and later moved on to writing. It was a challenge, but now that she's at a considerable level, she has started learning French, and the situation is similar because if the screen reader doesn't help her, it's difficult to see progress in her learning. She acknowledged that it's a challenge, but with technology, traditional methods, or a combination of both, it can be managed. She also shared that her first teachers didn't use technological tools, and they were learning braille while she was learning it too. This delayed her learning process and made it more difficult. It took a lot of time because her teachers had to learn braille first, and only after that could they teach her. She described it as a significant problem that lengthened her learning process. After finishing school, she stopped using braille and started using the computer, although she still used braille to take notes on important things. Now, she mainly uses the computer. Regarding textbooks, her mom adapted the materials for her, and some teachers, after learning braille, would adapt the readings or key texts that she needed.

Recommendations

What recommendations would you make for improving the use of assistive technologies in EFL instruction for visually impaired students?

Visually Impaired Student	The student recommends that it's essential to look for an updated and advanced version of a screen reader. She considers this tool an important complement to her learning process. She emphasizes that the person who checks and manages their devices and technological tools should be well trained to assist in the correct way. She also shared her preference for technological tools because they offer a direct means of communication with the teachers. For her, it's not just about the subject or the materials they provide, but also about the capacity to understand and receive the complete and accurate information.

Is there anything else you would like to share about your experiences with assistive technologies and learning EFL?

Visually Impaired Student	The female student reflects that as a visually impaired student, it is necessary to combine both learning modes available, meaning both braille and technology. She emphasizes that it's not just about one or the other, but the

	combination of the two mechanisms of learning. In addition to that, teachers' support is crucial, but she also points out that her own motivation is just as important. She believes these four components—braille, technology, teacher support, and personal motivation—are essential for success. For her, it's not only useful for learning a language but also for accomplishing all the tasks she needs to do.

CONCLUSIONS

This study aimed to explore the role of assistive technologies and learning strategies in teaching English as a foreign language (EFL) for visually impaired students at Liceo Panamericano in Guayaquil. The findings of this research indicate that assistive technology plays a significant role in enhancing the accessibility and the possibility to acquire a high-quality English instruction for students with visual disabilities. Nonetheless, several challenges have been encountered during the process, which diminish their overall effectiveness. These challenges include the lack of teacher training, the insufficient institutional support as well as the limited access to different technological resources.

The systematic literature review in conjunction with the theoretical foundations were developed with the objective of supporting the integration of assistive technologies in English instruction. This information highlights the importance of constructivist approach, the emotional intelligence and the importance of multisensory learning. These processes in which the previously mentioned theories can be achieved, portray the necessity of adapting teaching methodologies and strategies targeted to ensure an inclusive learning accommodated to visually impaired students' needs and requirements.

The qualitative data obtained from teachers' interviews show that each educator recognizes the importance of assistive technologies in the process of

improving language acquisition for a visually impaired student. They highlight the usage of tools such as screen readers (in this case JAWS) as well as braille displays. However, teachers report the absence of formal training and capacitations on how to use and integrate these technological resources in their instruction, which also limits their ability to know how to deal with technical problems that these tools present. Additionally, teachers point out the deficiency in interactive and accessible materials tailored for students with visual disabilities, which generates complexities in the learning process.

Furthermore, the perspective of the visually impaired student corroborates that assistive technologies are crucial for the continuity of the teaching-learning process. Although different devices and tools like screen readers or translators are very useful during the learning activities, different barriers were encountered related to pronunciation accuracy of some materials and documents. The student's recommendations underscore the need for a balanced approach in which braille and technological advancements could work together to foster a better language experience.

Ultimately, this research showcases that enhanced availability of assistive technology, well-structured teacher training and a deeper involvement and support of institutional authorities will be helpful to ensure an adequate EFL instruction for visually impaired students. Addressing this area is vital to generate a more inclusive educational environment.

RECOMMENDATIONS

Based on the conclusions and the research findings, some recommendations are proposed to enhance EFL instruction for students with visual impairments at Liceo Panamericano in Guayaquil.

- The establishment of teacher training workshops focused on using and integrating assistive technologies to help educators of students with visual disabilities develop inclusive methodological strategies and technological tools.
- The development of an educational plan for the mentioned school, which portrays the integration of students with visual impairments in all the classroom activities, can be created by adapting each activity to the specific needs of the students.
- Elaborate and implement a hands-on booklet that provides information about different assistive technologies centered on students with visual disabilities. This resource will be available for teachers and blind students to help them understand how to integrate, apply, and use these technological tools in the EFL teaching-learning process.
- The development and distribution of content and didactic materials in accessible formats, such as braille, audio, or screen reader-compatible versions, will help adapt the activities to the specific needs of visually impaired students and avoid barriers in their learning process.
- Incorporation of accessible and free access screen readers available in the required languages. One of the alternatives is NVDA, which, in contrast to Jaws, is an accessible and free option that enhances access to various reading and writing functionalities. Its implementation can generate a more inclusive

environment by providing visually impaired students with a more complete, reliable, and adaptable tool for language acquisition.

This study aims to explore new areas related to teaching English as a foreign language to students with visual impairments. Future research could develop an in-depth analysis to evaluate the long-term impact of technological resources on visually impaired students' learning and social outcomes. Additionally, it could be helpful to explore how mobile app implementation and artificial intelligence can be integrated into EFL instruction to create a more inclusive learning environment.

PROPOSAL

The purpose of this project is to address the challenges faced by visually impaired students in learning English as a foreign language. Teachers often struggle to find appropriate tools and methodologies that cater to the unique needs of these students, which can hinder their language acquisition and overall educational experience. This proposal focuses on the development of a resource booklet that compiles effective assistive technologies for English language instruction. The booklet aims to serve as a practical guide for teachers, enabling them to implement inclusive teaching strategies that enhance accessibility and foster active participation in the classroom. In addition to the development of this resource, a training workshop will be conducted to ensure that educators at Liceo Panamericano are equipped with the necessary skills and knowledge to integrate these technologies effectively into their teaching practices.

General Data	
Project Title	Implementation of a Resource Booklet on Assistive Technologies for Teaching English to Visually Impaired Students
Individual Project	Julissa Chippe Villamar
Main Objective	To develop a booklet that includes descriptions and key points of assistive technologies that can be used in teaching English to visually impaired students at Liceo Panamericano, enhancing accessibility and active participation.
Specific Objectives	1. To identify and gather the most effective assistive technologies in the context of teaching English as a foreign language to visually impaired students. 2. To provide a description and recommendations of each assistive technology included in the booklet, as well as guidelines for its application in English lessons. 3. To organize a training workshop for teachers at Liceo

	Panamericano, providing them with the necessary skills and strategies to use assistive technologies in their instruction.			
Execution Time	Starting	May 5, 2025	Ending	September 20, 2025
Evaluation Time	Starting	October 20, 2025	Ending	December 12, 2025

Project Description

The "Implementation of a Resource Booklet on Assistive Technologies for Teaching English to Visually Impaired Students" project aims to bridge the gap in English language education for visually impaired students by equipping teachers with a structured guide to assistive technologies. This initiative will ensure that educators at Liceo Panamericano have the necessary tools to create a more inclusive and effective learning environment.

The project consists of several phases, beginning with a diagnostic phase involving interviews with teachers and unstructured classroom observations to understand the current challenges and needs. Based on the findings, specific assistive technologies will be selected and analyzed for their applicability in English language instruction. The gathered information will then be compiled into a user-friendly booklet, offering descriptions, usage recommendations, and implementation guidelines.

To maximize the impact of the resource, a training workshop will be organized for teachers, allowing them to gain hands-on experience and confidence in using these technologies effectively. The final phase of the project will involve evaluating the effectiveness of the booklet and the training workshop through feedback and assessment tools.

Execution Matrix						
Objective	**Activity**	**What will be done?**	**Expected Outcome**	**Resources**	**Time**	**Responsibility**
S.O.1	Conduct a needs analysis to identify effective assistive technology	Interviews with teachers and unstructured classroom observations to assess challenges and existing tools.	Gather insights on the current state of assistive technology use in English teaching for visually impaired students	Checklists, notebooks, recording devices.	3 weeks	Individual
S.O.2	Define specific assistive technologies for classroom implementation	Analyze research and teacher feedback to select the most useful assistive tools	A refined list of assistive technologies suitable for English instruction	Research articles, expert consultation	3 weeks	Individual
S.O.3	Develop a structured booklet on assistive technologies	Compile and design the booklet, including descriptions, recommendations, and practical guidelines	A well-organized resource for teachers to enhance visually impaired students' learning experiences	Printing resources, design software	1 month	Individual
S.O.4	Organize a training workshop for teachers	Conduct a professional development session covering the usage of assistive technologies in English lessons	Teachers acquire skills and confidence in integrating assistive tools into their teaching	Training materials, venue, facilitator	6 weeks	Individual

Gantt Chart

	Strategy	Starts	Ends
1	Design and planning of the project	**05/05/2025**	**30/05/2025**
2	Diagnostic phase (interviews with teachers and unstructured classroom observations)	**02/06/2025**	**20/06/2025**
3	Define specific assistive technologies for the classroom	**23/06/2025**	**11/07/2025**
4	Development of the booklet (content and layout)	**14/07/2025**	**08/08/2025**
5	Reception and analysis of the booklet by teachers	**12/08/2025**	**31/08/2025**
6	Creation of a plan for training workshop sessions	**01/09/2025**	**3/10/2025**
7	Execution of the training workshop	**06/10/2025**	**14/11/2025**
8	Evaluation of workshop outcomes and feedback	**18/11/2025**	**28/11/2025**
Total Duration: May 5, 2025 - November 28, 2025			

Budget List

PROJECT	Implementation of a Resource Booklet on Assistive Technologies for Teaching English to Visually Impaired Students
RESPONSIBLE	JULISSA CHIPPE
DATE	May - November 2025
INSTITUTION	Liceo Panamericano School

	Equipment	UNIT COST	SUBTOTAL
Diagnostic Phase	Laptop	$300.00	$300.00
	Printer checklists	$ 0.20	$ 2.00
Implementation Phase	Transportation	$ 20.00	$ 80.00
	Food expenses	$ 5.00	$ 20.00
	Project salary (two people)	$ 30.00	$600.00
Office supplies	Ream of paper	$ 5.00	$ 50.00
	Sticky notes	$ 0.50	$ 10.00
	Pens	$ 0.25	$ 10.00
	Highlighters	$ 0.75	$ 15.00
Booklet costs	Printing cost (regular)	$ 5.00	$250.00
	Braille transcription	$20.00	$200.00
	Handouts for workshop	$ 2.00	$20.00
Equipment	Internet Service	$45.00	$45.00
Subtotal			$1,302.00

Contingency reserves (5%)			$ 65.00
TOTAL BUDGET			1,367.00

This budget ensures the effective implementation and evaluation of the project while accounting for essential materials, training resources, and logistical expenses.

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APPENDICES

UNIVERSIDAD CATÓLICA
DE SANTIAGO DE GUAYAQUIL

Facultad de
Artes y Humanidades

FAH-PINE-014-2024
Martes, 19 de noviembre del 2024

MSc. María Auxiliadora Velarde Cevallos
Rectora
Liceo Panamericano

En su despacho.

Reciba un cordial saludo. Por el presente solicito a usted muy comedidamente, salvo su mejor criterio, se permita a la señorita Julissa Chippe Villamar con CI#0926656786, estudiante del 8vo ciclo de la carrera de Pedagogía de los Idiomas Nacionales y Extranjeros – inglés, de la Facultad de Artes y Humanidades de la Universidad Católica de Santiago de Guayaquil, realizar observaciones áulicas que le permita recolectar información para elaborar su Trabajo de Integración Curricular (Proyecto de titulación) denominado *The Role of Assistive Technologies in Teaching English as a Foreign Language (EFL) to Visually Impaired Students at Liceo Panamericano in Guayaquil.*

La señorita Chippe estaría realizando dicha actividad en la clase de inglés que reciben los estudiantes, durante los meses de noviembre y diciembre 2024 y enero 2025.

De antemano agradezco la atención brindada.

Atentamente,

FACULTAD DE ARTES Y HUMANIDADES
CARRERA DE PEDAGOGÍA DE LOS IDIOMAS NACIONALES Y EXTRANJEROS - INGLÉS

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CLASSROOM OBSERVATION RESULTS

Observation Report: Exploring the Role of Assistive Technologies in Teaching English as a Foreign Language for Students with Visual Disabilities

1. Context and Observation Environment
• Observation Dates:
• First Observation: December 12, 2024
• Second Observation: December 19, 2024 (Student was absent; interview with the teacher)
• Third Observation: January 9, 2025
• Number of Observations and Duration:
• Three observations: The first and second lasted 40 minutes each; the third lasted 80 minutes (2 hours).
• Grade and Subjects:
• The student is in the 2nd year of the International Baccalaureate program.
• The subjects observed included English as a Foreign Language (EFL), History, Theory of Knowledge, and Visual Arts.
• Composition of the Class Regarding Students with Visual Disabilities:
• Only one student in the class has a visual disability.
• Assistive Technology Availability:
• The student brings her personal laptop, which has assistive software installed (JAWS).
• The classroom is equipped with a projector, computers, and virtual whiteboards, but these technologies are not accessible to the student because they lack the necessary screen reader support or installed software.

2. Objective of the Observation
• The purpose of this observation was to evaluate the usage of assistive technologies in the classroom, how the teacher integrates them into lessons, and how teacher and school facilitates the learning process for a visually impaired student in an International Baccalaureate program.

3. Teaching Strategies and Assistive Technologies Used
• The teacher utilizes Google Docs to provide accessible documents for the student, as digital textbooks and PDFs are not compatible with screen readers.
• The student primarily uses JAWS (Job Access With Speech) for reading documents, as she does not have proficiency in Braille. Due to her limited knowledge of Braille and the high cost of Braille technology, she relies on screen readers.
• The student cannot take official International Baccalaureate exams, which are provided in Braille, as this format is inaccessible to her.
• Podcasts are used by the teacher to assist with the student's listening comprehension in English

NTERVIEWS FROM TEACHERS

ENGLISH Subject

1. What types of assistive technologies do you use in your classroom for visually impaired students (e.g., screen readers, Braille displays)?

I use different types of assistive technologies, along my classes along the year, I can mention for example the great help that podcasts have given to me, specially to practice listening comprehension with my student which in this case is only one, but podcasts have helped her a lot to improve language, to improve listening skills. Another assistive technology is the program that she uses which is jaws which reads everything that I put digitally for her in order to work along the class. Sometimes, not all the time but sometimes, songs help a lot also to improve her listening skills because in my case, my student is really good at speaking, and is really good at grammas. But she is not really good at listening, so listening is a weakness in her, and she needs to improve that. I also use some online games that can be read to her I really don't remember the name now, but there are some online games that her to play and learn at the same time. There are also some digital books and pdf that she can use to read to answer comprehension questions and to look for information.

2. How do these technologies support the learning process for your students? Can you provide specific examples?

To be honest, each student is a different world, and in this case, in my world, which is my impaired student, she doesn't have a very good knowledge of braille, so is very difficult to work with her with braille for many different reasons. Not only because she doesn't have a bast knowledge in braille, but also because we the teachers are not trained to work with braille. Some of the apps that we used to use at the beginning of the school year, now require a payment and so it's not so available for us to work with that, so for me technology have been a great support, I cannot imagine what I should have done with my student without online activities, games, online books, online programs, important to teach her all what was and is in the pensum along the school year, so it is really a huge advantage to count on technology in this special case.

3. What specific teaching strategies do you employ when teaching English to visually impaired students?

I used a lot of strategies, because my student is part of the whole group, and I don't make a huge difference on what she can do, regarding the other group of students that I have. So, treat her like part of the whole class which she is all the time, so one of the strategies for example has help her and not only her but the whole class is dictation. She was not used to do these types of things; with the time we could do it faster. Another strategy is that I give them extracts of books or stories or texts, and I ask them for their opinion, like giving like a book report. This has help them to express themselves more, in this case specifically my student now can give oral presentations in front of the class without a problem, because she is been used to do all these activities along the class, these kind of activities along the class. Another one is like not only making comprehension questions while reading, but also asking her for a different ending, for what she would have done if she was the character of the story, or what

4. In your experience, how effective are these assistive technologies in enhancing the learning outcomes of visually impaired students?

Let's say that is 50% effective, because when as a teacher you teach a visual impaired student, technology doesn't do it all. Technology will never do it all. 50 % is on the teacher and the support and help with also hand in hand with the family, and the other 50% are the medias, and the resources that the teacher uses in order for that student to learn, so in this special case technology is very effective. She has improved a lot, she has learnt a lot, now she uses idiomatic expressions, high level words, the majority of the time in her activities, but that is also because of the help behind of all the activities, the corrections and the feedback and the talks that we have with her after any activity or any presentation or any lesson, even if it is written or oral, so that is going to be the key, a key element in the learning of the student, as I repeat technology is effective, but it is not everything.

5. What challenges have you encountered when integrating assistive technologies into your teaching, and how have you addressed these challenges?

One of the main challenges that I have encountered is the few resources that people with impaired with visual difficulties have, because, to be honest, there are not so many technological tools for blind people as we wish they were, and some of them are need to be paid for, so we can say that they are not reachable for everyone, with a low income, so sometimes I have found phantastic resources that could help my student to learn a lot but they happen to be not read by the program she uses in her computer, so what I have done is that I translate that to a google dock, I rewrite some of them sometimes, or I use the technology to copy them because for example pdf, the computer that she is using doesn't read pdfs, so what I do is that I copy and paste all from the pdf to the google dock and I make worksheets for her, and I make the books available in google docks, and I make a lot of workshops in google docks, so the computer can read to her, and she can complete the activities. For example one challenge that I overcome with her was training her to take the a2 exam, which is the KET, key for schools, at the beginning she couldn't do it, but I passed the pdf examples that you find on the internet, to a google dock and she could answer and it's very fascinating to see how she could do it in less time that I have imagined with practice. So, that is the way that I have taught her so far and I think the job has been good.

theory of knowledge:

1. What types of assistive technologies do you use in your classroom for visually impaired students (e.g., screen readers, Braille displays)?

Basically we use the laptop that in my case, the laptop that has Priscila, her laptop, and we do the information in electronic way, in a file, she can read and basically listen from an application that she has on the computer, and then sometimes i use a page, an extension that i found on google chrome, that convert the information that is written in aural or audio. that's the way that we do this, and basically my lessons, my subject is about discussing, so we can discuss in between lessons and yes, because is more oral than written the information, she has to reflect, and use the critical thinking, so more than technological, she uses the assistive technology to listen from the computer.

2. How do these technologies support the learning process for your students? Can you provide specific examples?

so, for example, when we have a knowledge lesson, from the theory of knowledge, she has to listen many times the question, because she has to reflect the question, and she has to connect in what the different perspectives for answering that question, she has to consider, all the knowledge that she has, and connect to the different contents, so, for that reason with technology she has the chance to listen again and again the question, and she does this to connect, to discuss, that's the way.

3. What specific teaching strategies do you employ when teaching English to visually impaired students?

something important to know is that she knows how to use the technology, she knows how to type and that makes easier all the other strategies, so, for example when we have to write and get information, it is easy for her to use the keyboard, in the way that it is not a problem for me, because it would be a little bit harder the production. in the part of the oral production, she can speak in enlgish during the reflection, because as i mentioned, my lesson, my subject is a lot of reflection, discussion, debates, so she has to think critically. the strategies that we use are thatones, discussions and debates.

history

1. What types of assistive technologies do you use in your classroom for visually impaired students (e.g., screen readers, Braille displays)?

basically for students that require to see images, there is a program that describes that, that helps me to get the images into words or audios. i don't remember the name of the program but i use it to help my student to understand what we are talking about. so, in the history subject we try to find the most suitable way in which she can understand the information because as you know is history, history are visual documents more than literary. talking about technology specific there is that program that reads the information. i use just one.

2. How do these technologies support the learning process for your students? Can you provide specific examples?

it helps her to see, to understand, and to comprehend the information so we can start analyzing it. because, in our subject what we do is to try to analize historical events, with present situations so we have a better knowledge of all the scenario. as an a example, i have my student who cannot see, and she uses her computer i send the information so she has the program which reads for her the information and then she understands the specific topic and then is easy for her to answer the questions.

3. What specific teaching strategies do you employ when teaching English to visually impaired students?

talking about strategies, reading aloud, and making comments about the kind of information, and also pair working because when she trys to work alone is quite difficult

Visual arts:

1. What types of assistive technologies do you use in your classroom for visually impaired students (e.g., screen readers, Braille displays)?

We work with textures, with clay, with aluminium paper. This subject is very practical, it is much more practical than theorical, but for theoretical things we use with the student videos in english and some lectures, but obviously in digital form.

2. How do these technologies support the learning process for your students? Can you provide specific examples?

The technology is very important for her, because she has her own computer and with the videos (artistic videos) and explanations, tese artistic videos bring a very specific or clear explanation of the instructions to make the art and give examples of the blending artists in the world and this is very important for me.

3. What specific teaching strategies do you employ when teaching English to visually impaired students?

the lectures and the computer. she has a screen reader, an assistant in the computer, and i bring to her some short lectures in english to practice. i don't exercise very much the english part, it is most practical. the visual arts are freer, you don't have specific themes to this signature. it is a freer practice and this is important because with my visually impaired student we can explore more options to make art, to make visual art but for her it is not visual, it is more sensitive art. sensitive art because she works with her hands, with the textures, she works with clay, and also with essences and paints,

Visually impaired student's interview

Background Information

Can you describe your experience with learning English as a Foreign Language?

Many Learning english for me is a new area of exploration, because it has many methods that are combined to have this ability of expression. First: started listening audios or songs in English, then, my computer starts to read the lyrix of the songs or the subtitles of a video that I listen, i try to relate the things taht i listen with the things that i read.

What is your current level of proficiency in English, and how did you reach this level?

I consider that my level is not high, is an intermediate level, because sometimes I don't have the exact way of saying the things, my English is not strong.

Use of Assistive Technologies

What specific assistive technologies do you use in your EFL classes?

I use the screen reader of my computer that is Jaws, this app reads all the things in English. I also use the google translator, not to translate the things; i use it because I put the text that I want to listen to, then I know how to pronounce it. I use this app. It tells me how to pronounce in a very good way the things that I want to know. It pronounces the words better than the screen reader of my computer.

How did you learn to use these technologies? Were there any challenges in learning to use them?

Generally, using the computer in a general way has been a big challenge for me because I struggled with some things like how to turn on or off, how to navigate on internet, it was so stressful for me because I have heard that many other friends that have the same conditions could use it in a very good way. i was frustrated about it but with the pandemic I started slowly looking at each key of my computer and exploring it. with the teachers in the past they couldn't connect with me and explained to me in a good way. i learnt alone to use my computer, it was like an adventure. the computation teachers that i had in the past couldn't connect with me and explain how to use it correctly.my objective was to introduce myself into that world. my objective was to have a more updated vision like the people of my age that have the same condition.

Can you describe a typical lesson where you use assistive technology? How does it help you during the lesson?

It's like more useful in english, because english has many areas so i need the assistance of my computer to do all these tasks. This is a very complex thing because i startd for example to listen the audio that cambridge provided to me and like answerin the questions that it has by listening my screen reader and the audio recorder. so, for

Impact on Learning

In what ways do you feel that assistive technologies have enhanced your learning experience in EFL?

It is more useful in listening, and also in reading because these are the parts that I use more the assistive technology that includes the screen reader of my computer, and also the records that Cambridge provides to me, and the experience is positive. Assistive technology helps me in a complete way only in these two areas . for me it is not necessary to use the computer in writing part. for the reading part, my challenge is that this speaker is currently in spanish, this app doesn't pronounce the words completely well, and it's very difficult to understand what information is in the text that is not clear enough.

Have you encountered any difficulties or limitations while using assistive technologies in your language learning? If so, can you elaborate on these experiences?

the difficulty are the barriers of pronunciation when i want to learn a new language. That's the reason why i prefer the teachers to read to me all the things because they pronounce better.

How do you think assistive technologies compare to traditional methods of learning English for you?

It is very different, because if you learn all the language in braille, you will struggle with areas like listening and speaking, because you don't experience these two things that you can do with assistive technology. I think and i come to the conclusion that you can have a unified learning using these two tools to complement learning

Personal Reflections

What strategies do you find most effective for your language acquisition, and how do they integrate with the assistive technologies you use?

for learning language, a strategy is to repeat the Vocabulary, high level words, assistive technology helps me say the words in an exact way, and idiomatic expressions. the computer also tells me if i am making a mistake, what in the traditional method i can't get.

How do you feel about your progress in learning English with the help of these technologies? What are your future goals in language learning?

I feel great and very happy because i look backwards and at 8th grade I was lost in this subject talking about this language in general, i didn't know how to start learning. you know that Liceo Panamericano had implemented this acquisition of language since students are child but in my case, i wasn't part of that when i started studying, i didn't received the atention that i required. so when i sstarted my highschool, it was the moment in which i reflected on the reasons why i didn't learn english before, it was the moment in which technologies helped me. i listen to my teachers but i also received the support of the technological methods that i had, because before i was lost but then i started to learn english slowly by listening at first but then i started writing. it was a challenge, but now that i am in a considerable level, i started learning another language that is french, is the same situation because if the screen reader doesn't help you, you cannot see an advance in the learning process. it's a challenge but you can look for ways to manage it, either traditionally or with technology or using both things but you do it. my first teachers didn't use these technological tools, they were learning braille while i was learning braille too, it was very difficult. it tools a lot of time, because first they needed to learn braille and when they have learnt it, they started to teach me. it was a very huge problem because it made my learning process longer and different, it was a very bad thing. i left braille when i finished my school, when i started my highschool i used the computer but i only used braille to take notes of important things. actually i only use the computer. talking about textbooks, my mom adapted all the things to me and i had all the texts, but when some teachers, not all, learned braille, they adapted the readings or the most important texts that i needed.

Recommendations

What recommendations would you make for improving the use of assistive technologies in EFL instruction for visually impaired students?

my recommendation is that it is necessary to look for a screen reader of an updated version, the most advanced one. this tool is important as a complement of your learn. the person that checks our devices and technological tools should be well trained to help us in a correct way. i prefere the technological tools because it is a direct way of communication with the teachers, because it is not only the subject or the things that they provide, but also the capacity to understand and receive the adequate and complete information.

DECLARACIÓN Y AUTORIZACIÓN

Yo, **Chippe Villamar, Julissa Stephanie**, con C.C: # 0926656786 autora del trabajo de titulación: **The role of assistive technologies in teaching english as a foreign language (EFL) to visually impaired students at Liceo Panamericano in Guayaquil** previo a la obtención del título de Licenciada en Pedagogía de los Idiomas Nacionales y Extranjeros (Inglés) en la Universidad Católica de Santiago de Guayaquil.

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Guayaquil, **20** de **Febrero** de **2025**

f. _____

Nombre: Chippe Villamar, Julissa Stephanie
C.C: 0926656786

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PALABRAS CLAVES/ KEYWORDS:	EFL (English as a foreign language), Assistive Technology, Inclusive Education, Visual Impairment, Teacher Training, Learning process		

RESUMEN/ABSTRACT (150-250 palabras):

This study examines how assistive technology supports teaching English as a foreign language (EFL) to a visually impaired student at Liceo Panamericano in Guayaquil. Assistive technologies include tools and devices that help people with visual impairments access information, making learning easier, engaging and more effective. This research aimed to explore how these technologies and teaching strategies can improve EFL instruction for visually impaired students. This study employed an exploratory approach utilizing qualitative methods to gather in-depth insights. To get the results, the researcher conducted unstructured interviews with four English teachers and an interview with the visually impaired student, along with unstructured classroom observations. These methods were instrumental in identifying the tools and strategies utilized in teaching English as a Foreign Language (EFL) to visually impaired learners. The findings showed that while several assistive technologies are available, their access and use is limited. JAWS (Job Access With Speech), a screen reader, was the primary tool used. However, the study highlights the need for more diverse assistive technologies to support learning. It also emphasizes the importance of training teachers to use these tools effectively in their lessons. Finally, the research underlines the continued importance of Braille as a key resource in the learning process for visually impaired students.

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