

**Learning English in a Distance Learning Environment through Mobile Applications and a Web-based Assessment Platform**

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### **Resumen**

El rápido crecimiento de las tecnologías de la información y la comunicación (TIC) ha traído varias ventajas al proceso educativo. Usualmente, en Colombia, los estudiantes de bachillerato y primaria asisten a los establecimientos educativos para acceder a la educación, pero desde el año 2020 se ha presentado un gran reto para los sistemas educativos debido a la pandemia del COVID-19. El gobierno ordenó a las instituciones el cese de los cursos presenciales, obligándolas a cambiar, casi de la noche a la mañana, al aprendizaje en línea y virtual. Sin embargo, los estudiantes de las zonas rurales son los menos animados a la hora de apoyar el aprendizaje con herramientas tecnológicas porque todavía existen barreras para aprovechar las tecnologías. Varios tipos de investigación afirman que las herramientas tecnológicas aumentan la motivación, el rendimiento y el interés, entre otros. Este trabajo presenta una plataforma de evaluación formativa y examina su uso en una escuela rural. También muestra el uso de aplicaciones móviles y los beneficios significativos que estas herramientas aportan al aprendizaje del idioma inglés. Los resultados muestran que el uso de la plataforma web aumentó los resultados de las pruebas externas y permitió el desarrollo de las habilidades de lectura.

***Palabras clave:*** tecnología, virtual, rural, plataformas, HIBOU

**Abstract**

The rapid growth of information and communication technologies (ICTs) has brought several advantages to the educational process. Usually, in Colombia, high school and elementary school students attend educational establishments to access education, but a huge challenge for education systems has arisen since 2020 due to the COVID-19 pandemic. The government ordered institutions to cease face-to-face courses, forcing them to switch, almost overnight, to online and virtual learning. However, students in rural areas are the least encouraged when it comes to supporting learning with technological tools because there are still barriers to take advantage of technologies. Several types of research assert that technological tools increase motivation, performance, interest among others. This paper presents a formative assessment platform and examines its use in a rural school. It also shows the use of mobile applications and the significant gains these tools bring to English language learning. The results show that the use of the web platform increased external test scores and enabled the development of reading skills.

**Keywords:** technology, virtual, rural, platforms, HIBOU

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### **Introduction**

In this twenty-first century, society has been making great strides in social, cultural, political, educational, and technological issues. These last two concepts are influential in the development of a country. Education trains people with certain competencies and skills demanded in the labor market. Its methods in the past have been characterized as traditional, where the role of the student was limited to being a receiver, and the teacher as the owner of the knowledge. Recently, many strategies and techniques place great value on the role of the student. It is understood that language learning processes are variable, and each person learns differently.

One of the most common strategies in learning English is the use of information and communication technologies (ICTs). Most research reports significant gains in increased motivation, cultural interactions and enhancement of the learning process. The study carried out by (Gikas & Grant, 2013) explores student perceptions of teaching and learning through the use of mobile devices such as cell phones and smartphones in higher education. The findings showed that the use of mobile devices creates opportunities for interaction, collaboration, and the creation of content that is easily shared on social networks. Research from the National University of Malaysia examined the use of ICTs for English language learning in urban students. The results show that the role of ICT is very important in language learning, and also impacts globalization. The study asserts that the role of teachers is crucial because they must guide and encourage students to use technological tools for language learning (Lubin & Lin, 2009).

Nevertheless, the simple fact of using technology will not provide adequate learning, the teacher must know innovative and striking technological tools to make learning more effective. Another factor limiting the use of ICTs in rural areas is connectivity, but mobile applications can



work with low connectivity costs. On the other hand, web platforms are generally easy to use and can be adapted to the context and needs of the students.

Seeing the advantages ICTs provide, this paper aims to examine the use of mobile applications and a web-based assessment platform for learning English, among rural school students. The results will show that the use of the HIBOU web platform will increase student motivation and will develop reading skills in all areas and it demonstrated that the results of the external tests were better compared to other years, as well.

### **Purpose**

This paper describes a qualitative study about the use of mobile applications and a web-based assessment platform in a rural school. Our aim is to explore the use of these tools in the rural school "I.E.M José Antonio Galán, Corregimiento de Santa Bárbara-Pasto, Nariño ". There is a great interest in knowing the use of mobile applications and a web-based assessment platform especially for teachers, since the use of technological strategies within the classroom increases students' motivation, interest, and therefore their school performance.

### **Justification**

Education is responsible for training well-rounded and knowledgeable professionals to compete in a world where opportunities are available for those best prepared in personal and professional matters. Currently, learning English is one of the main objectives in schools because it enables the cultural, scientific, and social development of the regions. The use of ICTs can bring advantages to the strengthening and learning of English, and increase student motivation.

This research will help teachers and institutions to understand the importance of applying technology in educational environments, in order to develop additional skills that are not achieved through a purely face-to-face education. It is important to take advantage of the variety of computer resources, the ease of communication, and the variety of content available on the network.

## **Theoretical and Conceptual Framework**

### **Education**

The concept of education has been expanded around the world of primitive times, it is related to the teaching-learning process, and composes two essential actors, the educator, and learners. Nevertheless, education is more than a process; it is a definitive factor in the evolution and development of society. Education is composed of methods and techniques with a pedagogical approach that allows for the strengthening of competences in a specific area. The educational institutions of the country are in charge of carrying out these processes and forming students capable of excelling and contributing to social development (Meyer, 1977). Over time, various types of education and strategies have been developed to obtain superior results in student performance and to generate formative and long-term learning. Among the types of education, we have face-to-face education, distance education, and combined education. Face-to-face education is based on personal interaction between students and educators which can strengthen social processes, stimulate collective learning, and teamwork (Tømte et al., 2015).

As far as distance education, this takes advantage of the use of technological tools that motivate students to independent learning (J. L. Moore et al., 2011). Finally, blended learning makes use of face-to-face learning, but supported in the use of technological tools.

### **Formal education**

Formal education is defined as an organized system governed and administered by state standards and laws; curricula and programs are organized in advance. In formal education, at the end of the cycle, a degree or diploma is received. This type of education is characterized by the teaching of courses in educational establishments approved by the government (Dib, 1988).

**Informal education**

Informal education is the acquisition of knowledge outside the classroom. In this type of education, the role of the teacher and the student is diminished, likewise, not attending an educational institution. Some activities take place at home, for example, watching the news, listening to music, or playing didactic games. (Dib, 1988).

**Non-formal education**

Non-formal education is usually provided in institutions that are not governed by the educational system but follow a schedule of activities and a curriculum. Non-formal education also has specific objectives and is adapted to the needs and interests of students. The courses can be given in person or can be individual work, there may not be a diploma or degree at the end of the course (Dib, 1988).

**Traditional education**

Traditional education starts from the fact that the teacher has the knowledge and the student is only a recipient of it. The teacher-student relation is authoritarian because it is the teacher who has absolute truths. Sometimes those truths are not linked to the social, historical, and cultural context of the student. This type of education limits creativity, security in speaking and decreases interest in learning (Adeyemi & Adeyinka, 2003).

**Distance education**

Distance education is characterized by flexibility because students do not need to attend classes in educational centers. The learning material is shared with the student through guides but may have support from ICTs. Distance education favors autonomous and independent learning. Nevertheless, it diminishes the personal interactions between teacher-learner, and learner-learner (Clark, 2020).

It also benefits students who need flexible schedules to follow academic programs. Typically, this type of education is used by college students who work or cannot devote full time to study. On the other hand, students from rural areas far from the city do not have access to face-to-face education, they can easily access distance education because it provides good quality standards.

### **Online education**

The information and communication technologies (ICTs) have opened a world of possibilities for the teaching-learning process, one of them is the so-called online education. It allows access to information without taking into account the obstacles of time and distance. It is important to note that online education provides the opportunity to share and learn about others.

According to the Colombian national ministry of education, online learning has gone through different generations. The first generation is characterized by the provision of worksheets, but little interaction between students and teacher.

The second generation introduced technologies that increased interaction with teachers and more didactic material. Finally, the third generation is incorporating more interactions between teachers and students through innovative technologies that increase student motivation and teacher feedback. Moreover, those tools enable the creation of discussion groups where students support each other and strengthen teamwork (*Educación Virtual o Educación En Línea - Ministerio de Educación Nacional de Colombia*, n.d.).

### **Language learning and teaching**

Learning a second language is an essential skill that students must acquire from an early age. We currently live in a globalized world where social interactions between people from other countries are increasingly common. Furthermore, learning a second language allows students to

know new cultures, visions, ways of thinking, and living. Language learning additionally allows us to put into practice the knowledge in a real situation, strengthen the communicative abilities, and share opinions about different subjects. Among the advantages of learning a second language is that it improves listening skills, memory, mathematical reasoning, creativity, and flexibility.

On the other hand, the teaching process is related to the role of the teacher, who must investigate and implement strategies and skills to facilitate the learning of a language. Those needs may vary according to the type of learner, either by age, community, or learner needs. The teacher's role is to accompany the student and help him form a cultural identity, since learning a language other than the mother tongue is a complicated process. This occurs because there are several factors necessary to consider in the language learning process. Indeed, foreign language teaching has undergone several changes throughout history, giving rise to several theories and studies about second language acquisition.

According to (Skinner, 1988), a pioneer of the behavioral theory, language acquisition is a process of habit formation that starts with stimulation, response, and reinforcement. For behaviorists, mastering a foreign language is based on the repetition and practice of the linguistic model until it becomes part of the student's outputs (Schneider & Morris, 1987). For behaviorism, interference with the mother tongue can generate errors in the acquisition of the second language but these should be avoided at all costs (Watson, 1927). The role of the teacher according to the behaviorist theory is to evaluate the student with a series of exercises that require the mental effort of the student, and based on the results, the student will receive praise as a stimulus. On the contrary, students will receive negative reinforcement or correction to avoid errors (Skinner, 1988).

On the other hand, (Chomsky, 2013) formulated a new theory based on generative grammar, which states that children are born with an innate capacity and ability to discover grammatical rules. From this perspective, we can deduce that there are specific rules that facilitate the learning of a language in children. In the work on aspects of the theory of syntax, (Chomsky, 2014) establishes the phonological and semantic relationships of the generative grammar, he also takes into account works of (Humboldt, 1988). In the same way, (Krashen, 1981) conceives language acquisition as a process of mental evolution where pupils do not need to speak or write to acquire knowledge in a second language. As (Krashen, 1981) points, acquisition is an unconscious process similar to the one we develop when we learn our mother tongue.

Another of the most relevant theories in language acquisition is constructivism, among the most mentioned authors, are (Piaget & Inhelder, 2008) who argue that the agency can organize and accommodate environmental data into knowledge patterns as the child grows and advances in learning. From this theory, we can conclude that children discover the grammatical rules of a language from their knowledge.

### **Technology**

The concept of technology is usually associated with electrical and electronic devices that are used to facilitate tasks, save time and improve living conditions. In this sense, technology has impacted all fields and areas of our environment. For example, medicine, agriculture, and education. However, technology is also associated with the procedures and methods that have served humanity to meet needs.

**Educational technology**

Education is characterized by adapting to needs and incorporating innovative strategies, as time goes by. Some studies state that the use of technologies in education has had several phases over the years. At first, technology was used to present audiovisual material. Secondly, the use of theories that supported learning processes was incorporated, as well as the application of systemic approaches. Finally, the strengthening of interactions and interpersonal relationships through ICTs was taking into account. Pedagogical models have been adapted to new technologies to take advantage of them and strengthen learning in the classroom, this is summarized in the so-called educational technology. According to (Cabero, 2001) educational technology is the study and ethical practice of facilitating learning through the creation, use, and management of appropriate technological resources. It can be implemented as an extra aid for making learning more productive, meaningful, and long-lasting. The simple fact of using technology will not provide adequate learning, the teacher must know innovative and striking technological tools where students can interact, generate working groups and create friendly relationships. It is also important to know the student's aptitude, learning style, personality, motivation, and needs.

**Computer-assisted Language Learning**

In recent years, computer-aided language learning (CALL) has increased significantly (Lee, 2000). The use of technological tools has greatly innovated academic processes and has brought countless advantages for students and teachers. (Warschauer & Healey, 1998) proposes three main stages related to pedagogical theories that demonstrate the changes that computer-assisted language learning has had. The first stage is behaviorism, characterized by repetitive language exercises, explicit grammar, and translation tests. The second phase is related to the



communicative function, where grammar must be taught implicitly and students must be encouraged to create original expressions. Finally, the third phase is the integrative one, which is taken from a socio-cognitive perspective that allows the use of the foreign language in a real context. In this phase, it integrates the language skills (listening, speaking, writing, and reading) with the new technologies.

Research and practice suggest that the appropriate use of technology contributes to motivation, experiential learning, improved student achievement, authentic study materials, greater interaction, individualization, and global understanding. Thanks to the Internet, it is possible to find and adapt the teaching material to the needs of the students, their level of English, and the learning objectives set by the teacher at the beginning of the course.

### **ICTs**

Information and communication technologies (ICT) are a set of technological tools and resources used to communicate, create, spread and store information. (Jiang et al., 2019) in partnership with UNESCO states that the primary objective of ICTs is to improve quality education and teaching in educational institutions. The following are some valuable investigations and contributions to this research.

The investigation carried out by (Offir et al., 2003) presents a distance learning project to motivate and train talented students from underdeveloped areas to participate in university distance learning courses. The research describes the problems encountered and the difficulties of teaching in a distance learning environment. It also proposes solutions to prevent obstacles to distance learning.

Authors such as (M. G. Moore & Kearsley, 2011) argue that distance educators should provide for types of interactions between teachers, learners and content through technology to

boost language learning. This study supports teachers by taking into account language acquisition theories and literature review to propose a guide in the creation of distance language learning courses.

The study developed by (Tømte et al., 2015) analyzes the distance formation of teachers towards ICTs about digital competences to apply in the teaching environment. The final objective is to motivate students in educational institutions to develop their digital competences to strengthen their professional profiles. To obtain clearer results, the research was developed under the qualitative and quantitative approaches. The results showed that there are no innovative solutions to develop and apply digital competences in online teacher training.

(Aesaert & Van Braak, 2015), investigate the correlation between gender and socio-economic status in ICT skills development. The research aimed to address the study under the design of evidence, based on the ICT competences of primary school students. The results showed that girls have better skills than boys, and communication competence leads to difficulties in boys.

According to the literature, (Atisabda et al., 2015) set the goal of increasing school performance in Thailand's risk areas. The research was developed under the qualitative approach starting with the phase of management, analysis, synthesis, and finally the proposal of a strategic model for secondary students. The results showed that the quality of education should be improved in risk areas, to support school students to enter higher education based on online learning.

Finally, (Neroni et al., 2019) designed an investigation related to learning strategies and academic performance of students in distance learning environments. Data collection was done

through the use of online questionnaires that helped determine learning strategies and test scores for assessing academic performance. Research results showed that cognitive strategies were not related to academic performance and that younger students take less time to develop online activities.

The following studies are a collection of research focused on finding innovative and engaging strategies that motivate students to learn and improve academic performance through technology.

The study carried out by (Gikas & Grant, 2013) explores student perceptions of teaching and learning through the use of mobile devices such as cell phones and smartphones in higher education. The research was developed under the qualitative approach, as the data were collected through interviews. The results show that the use of mobile devices creates opportunities for interaction, collaboration, and the creation of content that is easily shared on social networks. However, it emphasizes the need for constant connectivity.

These conditions have been extensively documented by many researchers, including (Awidi et al., 2019) their study aimed to evaluate student performance through participation and lectures in a Facebook group. The aspects that were evaluated were motivation, resources, support, feedback, and evaluation. The results show that students experienced a sense of community and were more encouraged to learn through participation in Facebook.

Other researchers (Smutny & Schreiberova, 2020), investigate the use of chatbots for educational purposes via Facebook Messenger. Chatbots are a new strategy of artificial intelligence in which you can generate interaction with a kind of robot about conversations of any subject. The results showed that this new technology is in the early stages, but in the future, it can become a useful teaching assistant for teachers in communication practice.

**Mobile Applications**

Mobile applications are an essential part of smartphones. Currently, there are a vast number of applications oriented to learning English. The use of these tools has advantages in terms of flexibility, accessibility, and availability, which is ideal in a distance education context.

The use of these tools facilitates and motivates students (Makoe & Shandu, 2018). Nevertheless, the improvement of academic performance will depend greatly on the student.

**Web platforms**

Educational platforms are a clear example of the benefits that technology can bring to the teaching-learning processes because they allow the personal training of students and save time for teachers in the evaluation of exams. However, it is important to develop platforms that are easy to use, intuitive, creative, and with clear content that allows achieving the planned objectives easily.

### Didactic Unit

A didactic unit is a set of activities with methodological coherence that meets a learning objective. It also incorporates the contents established in the curricular programming, the family and sociocultural context, and the level of the students. A didactic unit must take into account the availability of resources for the development of strategies, in addition to being creative and allowing to carry out evaluative processes.

The development of didactic units allows the correct management of the strategies adopted by the teacher because it is a plan that has been subsequently planned. This serves to have clarity in the contents and to include the most appropriate strategies for learning.

The didactic unit presented in this paper is a web platform with a focus on formative assessment and the use of mobile applications for learning English in a distance learning context. The following is a theoretical context about the components of formative assessment which are applied in the web platform and the steps that students must follow to use the application.

According to the latest updates made by the National Ministry of Education MEN, formative assessment has become a tool for improvement. This is how the guide (*La Evaluación Formativa y Sus Componentes Para La Construcción de Una Cultura de Mejoramiento*, n.d.) establishes the components of formative assessment, how it should be applied, and the advantages. This guide was carried out within the framework of **Siempre día E** in 2017.

It is important to know the components of formative assessment since the HIBOU web platform meets all the requirements established by the MEN, and it is a useful tool to strengthen the evaluation processes. The following is a detailed explanation:

**Formative assessment**

Formative assessment is a process of improving pedagogical practices as an integral part of the teaching-learning process, which allows teachers to obtain evidence of student performance, interpret and evaluate results. Within this evaluative approach, each student progresses at his or her own pace, but all reach the learning goals by overcoming difficulties and making appropriate use of resources.

**Learning monitoring**

In the institution, all students should have high expectations about their ability to succeed, regardless of their background, social, economic, and cultural situation. The institution must develop pedagogical activities that foster the joy of learning. It is also important to identify strengths and weaknesses in students to design strategies to overcome them. The curricular programming must be concrete and articulated to the basic standards of competence, basic rights, reference frameworks of the MEN, ICFES guidelines, and the context. Finally, the rubric for performance evaluation is as follows: low, intermediate, advanced, and superior.

**Pedagogical use of results**

The pedagogical use of results consists of taking advantage of the human talent of the teaching staff, as well as using resources articulated to learning. The analysis of the results is evidenced in the internal and external evaluation. The internal evaluation is the evaluation performed by the teacher in the classroom, and the external evaluation is the SABER 11 test. In this process, it is important to make known the evaluation mechanisms established by the teacher because they must also be known by the students.

**Mobile applications in learning**

During the year 2020, the “Institución Educativa José Antonio Galán” received intern students from the English - French program of the University of Nariño who were in charge of the English subject in primary grades. Each grade received two hours of classes per week via WhatsApp where intern students shared videos, guides, audios, and images. At the same time, students actively participated in the English courses. The institution provided students with tablets with two mobile applications that did not require connectivity. One was the English-Spanish dictionary, and the other was a game application to learn English expressions. The intern students provided feedback via WhatsApp.

The eleventh-grade students used the HIBOU web platform to strengthen the English learning process, which contained questionnaires divided by levels for each performance. The questions were adapted by the teachers taking into account the curricular program and ICFES standards.

**Web-based Assessment platform**

HIBOU is an educational web platform that helps teachers and students strengthen the process of evaluating and monitoring learning by developing tests based on “PRUEBAS SABER”. Unlike other platforms already on the market, HIBOU has a qualitative assessment methodology that allows students to advance at their own pace but always achieving the proposed objectives. This platform was developed by two students who graduated from the Systems Engineering program of the University of Nariño, and a student of the English-French program of the same university, in collaboration with “Institución Educativa José Antonio Galán” of Santa Barbara in the city of Pasto-Nariño that provided the curricular programming of the English area for the tenth grade. The test questions were adapted by teachers from the same

institution. The following images show the content of the platform, and the steps that students must follow to use it correctly. It also shows the reports for the teacher to continuously monitor student learning.

On the main page, students register and log in.



Figure 1. HIBOU main page

After logging in, students must choose the English subject.



Figure 2. Student's home panel



Then, appear the tenth-grade performances established in the curriculum and their description.



Figure 3. English performances established in the curricular program

Upon entering the performance, the four levels are displayed. The student must start with the low level and continue until reaching the Superior level. The student must complete the questionnaires in the order of the levels; the platform does not allow advancing to a level if the previous one has not been completed.

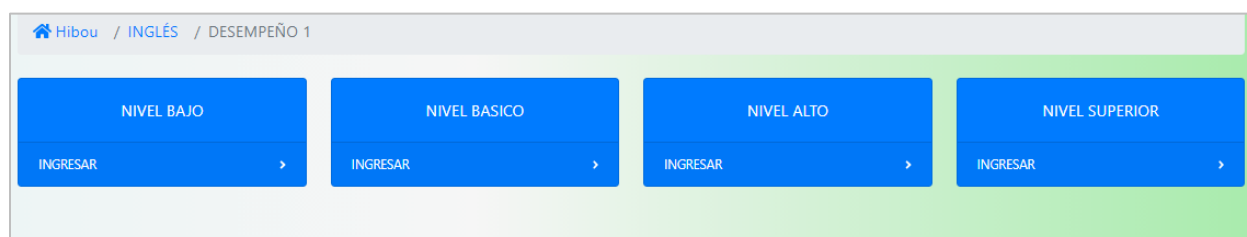


Figure 4. Learning levels

Each level contains a minimum of five questions designed by the teacher. If a student answers a question incorrectly, he or she must retake the quiz until all the answers are correct. The student has no limit to the number of attempts but must answer all questions correctly. After each attempt, random questions appear, and the order of the questions and answers changes.

NIVEL BAJO ¿DONDE PUEDE VER ESTOS AVISO?	
1. You can see the elephants here. Don't take pictures	<p>A. <input type="radio"/> at the park</p> <p>B. <input type="radio"/> at the zoo</p> <p>C. <input type="radio"/> at the beach</p>
2. No one under 18 can be admitted	<p>A. <input type="radio"/> In a bus</p> <p>B. <input type="radio"/> In a disco</p> <p>C. <input type="radio"/> In a school</p>
3. You must wear shoes in the boats at all times	<p>A. <input type="radio"/> On a farm</p> <p>B. <input type="radio"/> By a lake</p> <p>C. <input type="radio"/> In a shoe shop</p>
4. Danger! You mustn't swim here	<p>A. <input type="radio"/> At a beach</p> <p>B. <input type="radio"/> On a hill</p> <p>C. <input type="radio"/> In a forest</p>
5. You have to clean the board in the afternoons	<p>A. <input type="radio"/> in a hall</p>

Figure 5. Low level test

The teacher from his account can monitor students in real-time. The spreadsheet shows the name of the students and the performance number. The level of each student is marked with colors. Low level red, intermediate level orange, advanced level yellow, and advanced level green.

Desempeños								
Nombre	Disciplina	1	2	3	4	5		
JHONATAN HERNANDEZ	INGLÉS							
MARIA ISABEL ANDRADE PRADO	INGLÉS							

Figure 6. Results spreadsheet

### **Conclusions**

Evidencing learning in times of pandemic was the biggest challenge for the teachers because they did not have the knowledge, resources, and experience necessary to apply technological tools in learning. The HIBOU platform allowed a personalized assessment of each student according to their learning pace. Some students with very few attempts advanced from low to basic, intermediate, and superior, while other students struggled at each level with many attempts to pass each test. The platform by incorporating randomization in the questions and answers requires the student to read very well, developing excellent reading and comprehension skills.

The formative assessment platform was the most effective strategy to evaluate learning in times of pandemic, since it responds to the context, the curricular programming and virtually invites the student to impose challenges for improvement. This platform motivates the student to perform the leveling immediately with real-time results, which are observed by the teacher and the student.

Regarding the use of mobile applications in elementary school, learning was significant, not only in knowledge related to English but also in the conscious and appropriate use of technological tools. The interactions through WhatsApp allowed the use of didactic, creative, and authentic material that increased the motivation of the students.

The platform contributed greatly to motivating students to achieve high levels of learning and to surpass each level of performance starting from the mastery of basic concepts. The evaluation ceased to be that moment of terror when presenting tests since the student individually and autonomously chooses the moment he/she wants to take the tests. The learning process was enjoyed at all times due to the leveling strategies and immediate feedback.

The platform takes advantage of the teaching staff because they are clear about the topics of the curricular programming and develop questions according to the programmed contents. For the teachers, the use of the platform saves them time when grading, passing grades, and preparing written exams. The “Institución Educativa José Antonio Galán” was able to show that thanks to the support of the platform, the overall results of the SABER11 2020 tests were higher than in the last two years.

The technological tools proposed in this study proved to be beneficial for the students in several aspects. Positive attitudes were observed in the children when taking exams on the web platform. They also felt at ease and enjoyed the process. The platform provided convenience and flexibility when taking the tests, which is why high levels of foreign language learning were achieved. Perhaps the Ministry of Education could offer seminars or courses that promote the use of technology in the classroom as a strategy to strengthen and motivate English learning.

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