



*Recursos educativos digitales en atención a la diversidad en la Universidad
Técnica de Babahoyo en el área de inglés*

*Digital educational resources in attention to diversity at the Technical University
of Babahoyo in the area of English*

*Recursos educacionais digitais em atenção à diversidade na Universidade
Técnica de Babahoyo na área de Inglês*

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Resumen

La diversidad creciente en el ámbito universitario presenta desafíos para proporcionar una atención individualizada y garantizar el éxito académico. La falta de adaptación de los recursos educativos digitales a esta diversidad y la escasa conciencia y formación de los docentes en estrategias inclusivas contribuyen a la problemática. Por ello, el objetivo de la investigación fue explicar el impacto de los recursos educativos digitales en la atención a la diversidad en el área de Inglés de la Universidad Técnica de Babahoyo. Para ello, la metodología utilizada se centró en analizar las percepciones de los estudiantes mediante entrevistas y análisis documental. Los resultados destacan la preferencia de los estudiantes por herramientas interactivas y plataformas que fomenten su participación activa. Se concluye que la integración de recursos educativos digitales es una estrategia prometedora, respaldada por teorías pedagógicas sólidas, pero se enfatiza la necesidad de abordar barreras institucionales y profesionales para una implementación efectiva. La atención a la diversidad a través de recursos digitales requiere un enfoque holístico y colaborativo para mejorar la calidad del aprendizaje en contextos universitarios.

Palabras clave: diversidad; recursos educativos digitales; inclusión educativa; inglés.

Abstract

Increasing diversity in the university setting presents challenges to providing individualized attention and ensuring academic success. The lack of adaptation of digital educational resources to this diversity and the low awareness and training of teachers in inclusive strategies contribute to the problem. Therefore, the objective of the research was to explain the impact of digital educational resources on the attention to diversity in the area of English at the Technical University of Babahoyo. For this, the methodology used focused on analyzing the perceptions of students through interviews and documentary analysis. The results highlight the students' preference for interactive tools and platforms that encourage active participation. It is concluded that integrating digital educational resources is a promising strategy, supported by sound pedagogical theories. Still, the need to address institutional and professional barriers for effective implementation is emphasized. Addressing diversity through digital resources requires a holistic and collaborative approach to improve the quality of learning in university contexts.

Keywords: diversity; digital educational resources; educational inclusion; English.

Resumo

O aumento da diversidade no ambiente universitário apresenta desafios na prestação de atenção individualizada e na garantia do sucesso acadêmico. A falta de adaptação dos recursos educativos digitais a esta diversidade e a fraca sensibilização e formação dos professores em estratégias inclusivas contribuem para o problema. Portanto, o objetivo da pesquisa foi explicar o impacto dos recursos educacionais digitais na atenção à diversidade na área inglesa da Universidade Técnica de Babahoyo. Para isso, a metodologia utilizada focou na análise das percepções dos alunos por meio de entrevistas e análise documental. Os resultados destacam a preferência dos alunos por ferramentas e plataformas interativas que incentivem a sua participação ativa. Conclui-se que a integração de recursos educacionais digitais é uma estratégia promissora, apoiada em teorias pedagógicas sólidas, mas enfatiza-se a necessidade de abordar barreiras institucionais e profissionais para uma implementação eficaz. A atenção à diversidade através de recursos digitais requer uma abordagem holística e colaborativa para melhorar a qualidade da aprendizagem em contextos universitários.

Palavras-chave: diversidade; recursos educacionais digitais; inclusão educacional; Inglês.

Introduction

One of the most important challenges in education today is to teach for the diversity of students, particularly when it comes to higher education. The English Language program at the University of Babahoyo has a diverse student population with differences in cognitive abilities, learning styles, prior knowledge, specific educational needs, ethnicity, social status, among other aspects. Although it enriches the academic environment, this diversity presents challenges in providing individualized attention, which is necessary to ensure the academic success of each student.

In this sense, digital educational resources provide interactive and personalized experiences that allow students to build their understanding of the language through exploration and experimentation. According to Tünnermann (2011), knowledge construction is only feasible if it is related to the subject's prior knowledge. That is, digital activities help students to construct meanings, linking new concepts with their prior knowledge and developing language skills autonomously.

In studies conducted by Pérez and Díaz (2021), they state that technology and its immersion in the educational field enhance the educational process by offering digital didactic material adapted to the individual needs of each student. However, the need for further research on how these specific digital resources influence the diversity of university English learning is evident. Martinez (2018) highlights the benefits of digital resources by enhancing cognitive skills and fostering the cohesion of ideas in the educational process.

Bermeo and Díaz (2022), for their part, examine the effectiveness of digital resources in foreign language learning, particularly in students with mild intellectual disabilities, highlighting their resistance may limit the inclusion of students with mild intellectual disabilities in the use of digital resources for foreign language learning. In addition, it is important to consider the need to adapt methodologies and digital resources to meet the specific needs of these students, thus promoting a more inclusive and equitable education. usefulness and effectiveness of the methodology employed. However, Bravo and Santos (2019) point out the resistance towards diversity in university environments, where a rigid focus on cognitive competencies prevails.

The lack of digital educational resources adapted to university student diversity stands as one of the prevailing causes of this problem. In addition, the lack of awareness and teacher training in relation to inclusive pedagogical strategies and the appropriate use of digital resources also affects this situation. Guerra-Báez (2019) state that, if this problem is not solved, university students with special educational needs could experience exclusion and demotivation in their academic development. Likewise, those with different learning styles could suffer low academic performance and underutilization of their individual skills and talents. In this context, the central question arises: What is the impact of digital educational resources in the attention to the diversity of university students in the area of English?

The study by Castro et al. (2019) identifies emerging technologies and their optimal use in inclusive education in English. It highlights the potential of virtual platforms and technologies associated with web 2.0 to adapt to individual styles and needs, facilitating inclusive and equitable learning. The incorporation of these tools in English language teaching promotes a motivating and adaptive educational environment tailored to the specific needs of each student. In addition, the study points out that these technologies also encourage active student participation, allowing them to interact and collaborate with their peers virtually. This contributes to the construction of an inclusive learning environment where the exchange of ideas and diversity of perspectives is promoted.

In addition, constructivism emphasizes the active participation of the student in the construction of knowledge, especially when combined with digital tools. It suggests that this training arises from within the individual, being the individual himself the one who develops his understanding of reality supported by technology to motivate and encourage learning (Araya et al., 2007). Also, according to Saldarriaga et al. (2016) indicate Jean Piaget, intellectual development is a process of restructuring knowledge that begins with external change, altering existing structures and generating new concepts as human development occurs. Both of these perspectives emphasize the importance of the individual's active participation in his or her own learning and intellectual development process. Technology provides tools and resources that can facilitate this process by allowing the individual to access information and experiences that were previously inaccessible. Constructivism proposes a perspective in which the individual becomes the primary agent in understanding reality and implies a transformation of cognitive structures through interactions with the environment, leading to the generation of new ideas as the process of growth and learning progresses (Guamán et al., 2020). These approaches also emphasize the need for students to be able to apply their knowledge in real situations and to solve problems autonomously. In addition, the use of digital tools facilitates students' access to a wide range of resources, collaboration and the exchange of ideas with other peers.

Digital resources have transformed the teaching of English as a foreign language by offering interactive experiences tailored to each individual. Knowledge construction requires making connections with students' pre-existing knowledge (Ortiz et al., 2023). This interaction not only allows for the construction of meaning, but also the connection of new concepts with prior knowledge, fostering the autonomous development of language skills. This active approach to language acquisition demonstrates how digital resources modify learning, enhancing autonomy and personal value in linguistic comprehension (Vera, 2022). In addition, the incorporation of digital resources in the teaching-learning process provides learners with the opportunity to access a wide variety of materials and interactive tools that can enrich their educational experience. These digital resources can also facilitate the practice and reinforcement of language skills through interactive activities and educational games.

Within the English language domain, digital resources can be adapted to different types of intelligence, such as the use of videos for students with visual-spatial skills, interactive applications for those with logical-mathematical skills, and oral activities for those with language skills. This

adaptation aims to foster engagement and learning success in all students. According to this, Gardner, cited by Diaz (2015), questions the teaching-learning process by considering that there are several forms of intelligence and that each individual possesses a unique combination of them in his study on the theory of Multiple Intelligences. Thus, this theory argues that there is no single form of intelligence, but that there are different types, such as logical-mathematical and linguistic. This implies that each person has a unique combination of these intelligences and, therefore, requires educational approaches tailored to their strengths (Sospedra et al., 2022).

The recognition of diversity in the forms of intelligence underscores that we all have these abilities, although their development is affected by our experiences and personal learning processes. Its focus on generating collaborative experiences in the classroom emphasizes the importance of demonstrating significant achievements and employing strategies adapted to the diverse multiple intelligences (Roncal et al., 2022). This perspective emphasizes the importance of promoting inclusive and flexible educational environments that allow each student to unfold his or her full potential.

"Universal Design for Learning (UDL) aspires to establish flexible and accessible educational environments, regardless of the peculiarities of the students" (Fernández, 2018, p. 13). Its approach is underpinned by diversity as a standard, urging teachers to modify their educational methods to meet needs from the outset. By offering multiple alternatives and removing barriers, it seeks to ensure quality education, encouraging full participation and optimal academic and personal development (Fernandez, 2018).

In such a way, in the following study at the Technical University of Babahoyo, students exhibit dissimilar levels of linguistic competence and skills. This demands differentiated pedagogical approaches to address their individual needs, which may pose obstacles to reaching their full potential due to the lack of adaptation of educational resources. From this perspective, digital educational resources emerge as potentially beneficial tools to support attention to diversity and enhance the learning process of English language learners.

Methodology

The present research aims to explain the impact of digital educational resources in the attention to diversity in the area of English at the Technical University of Babahoyo. The methodology adopted is of mixed approach since it combines qualitative and quantitative elements to obtain a

comprehensive understanding of the situation (Hernández-Sampieri et al., 2018). The research focused on analyzing the responses of university students to digital educational resources and their impact on attention to diversity. This methodological approach allowed delving into the various facets of the interaction between students and digital tools, exploring how these contributed or not to the adaptation of teaching to meet individual needs.

Research Design

The research is framed within a descriptive and cross-sectional design. The choice of a descriptive design allows describing the characteristics of the digital educational resources used, while the cross-sectional design facilitates data collection at a specific time (Alban et al., 2020). On the other hand, the correlational approach seeks to identify possible relationships between the use of these resources and academic performance (Hernández-Sampieri et al., 2018).

Population and Sample

The target population consists of 100 level 1 students of the Technical University of Babahoyo taking the English subject. The choice of this specific group allowed focusing the research on students who are beginning their academic trajectory at the university. In the research conducted, a non-probabilistic purposive sampling approach was used, where the selection of the sample was carried out deliberately and according to the convenience of the researcher. According to Chacón et al. (2022) indicate that this method allows choosing participants or specific elements that were considered more relevant or accessible for the objectives of the study. With this, the aim was to maximize the representativeness of the sample within the limits established by the convenience and goals of the research, thus ensuring that significant and pertinent information was obtained for the analysis and the results obtained.

Data Collection Instrument

A survey designed in Google Forms was used to collect information. The survey consists of 10 structured questions with Likert scales, addressing the variables frequency of use of digital resources and attention to the diversity of university students in the area of English. It is important to highlight that the instrument was validated by two content experts in Educational Technology

and ICT-mediated learning, since the expertise in the educational field, especially in higher education, and in the management of educational technology of these two professionals guarantee that the instrument has the necessary specifications to be reliable and allow collecting data in an optimal way.

In order to elaborate this data collection instrument, the variables proposed for this study were taken as a reference, as can be seen in Table 1, which details each independent and dependent variable, as well as its dimensions and indicators. The independent variable deals with the use of digital educational resources, while the dependent variable corresponds to the attention to the diversity of university students in the area of English.

Table 1

Table of operationalization of variables, dimensions and instruments

Variable	Dimensions	Indicators
V.I. Use of digital educational resources	-Types of digital resources.	-Digital educational resources that teachers use to teach English at the university.
	-Frequency of use of digital resources.	-Frequency of use of digital educational resources in English classes.
	-Learning preferences.	-Types of digital educational resources that students prefer to improve their learning in the English language.

V.D. Attention to the diversity of university students in the area of English.	-Perceived barriers.	-Obstacles teachers face when implementing digital educational resources in the area of English.
	-Specific strategies used.	-Strategies used by teachers to meet the needs of diverse students in the area of English through digital educational resources.

Note. This table shows the operationalization of variables, dimensions and instruments.

Stages of the investigation

The design of the research schedule allowed the application of planning in the distribution of resources and time throughout the different stages. The initial focus on defining the problem and exploring the literature lays the essential foundation for the rest of the study. The thorough review of the literature and the synthesis of earlier data in the initial phases lead to a deeper understanding of the phenomenon under consideration. The data collection stage, involves teachers, students, surveys, and digital platforms. The analysis and interpretation of results, supported by advanced statistical tools, foster a sound and informed understanding of the information collected.

The presentation of the study, through the use of technological resources, emphasizes the importance of transmitting the discoveries clearly and effectively. This detailed structure reveals careful planning aimed at fostering the excellence and depth of the research process at each stage.

Analysis of results

This research examines students' perceptions and practices of the English career at university regarding the use of digital educational resources in their teaching methods. Table 2 provides an overview of the evaluation of these resources, as well as an assessment of the utility of the specific types of digital resources used, the perceived training in its implementation and the adequacy of methodological strategies in conjunction with these resources.

Regarding the appropriateness of the resources used, 56% of teachers consider them adequate, while 17% classify them as inadequate. 17% and 10% perceive them as totally adequate and inadequate, respectively.

In terms of utility, 69% of teachers rate digital resources as "Very useful", highlighting a mostly positive perception. Only 10% consider them "Useless". Regarding training, 64% agree "Totally" that there is enough training to use digital resources, while only 9% disagree.

In the context of attending to student diversity, 73% of teachers find the use of digital resources "Totally adequate". However, the analysis reveals areas of improvement, as 27% perceive methodological strategies along with digital resources as "Inadequate", noting the need to explore and improve in this regard.

Table 2
Systematization matrix on the use of digital resources

	f	%
The digital educational resources that their teachers use to teach English at the university are:		
Suitable for	56	56%
Inadequate	17	17%
Fully suitable	17	17%
Wholly inadequate	10	10%
In relation to the types of digital educational resources that teachers of your level use in their English career, how would you rate them in terms of utility?		
Somewhat useful	17	17%
Useless	10	10 %
Very useful	69	69 %
Utterly useless	4	4 %
Does it consider that there is sufficient training for English teachers to make the most of digital resources?		
Okay	27	27%
At odds	9	9%
Totally agree	64	64%
Is the use of digital educational resources to meet the needs of diverse students in the area of English?		
Suitable for	19	19 %
Inadequate	8	8 %
Entirely suitable	73	73 %

The methodological strategies along with the digital resources used to address the diversity of students in the classes are:	Suitable for	15	15 %
	Inadequate	27	27 %
	Entirely suitable	58	58%

Note: Own elaboration

On the other hand, Table 3 offers a systematization matrix that examines the application of digital resources in the educational field of English, focusing specifically on attention to diversity.

The analysis of the table reveals key information about the application of digital resources to address diversity in the educational context of English. Regarding the identification of diversity in the classroom, a considerable 66% of teachers say they always recognize this diversity before the teaching-learning process, indicating a significant predisposition to address this dimension in their classes. There is also a positive inclination of teachers' perception towards the receptivity of students to digital resources, as 57% consider it very positive, and only 11% perceive it as negative, suggesting widespread acceptance.

Regarding the use of Universal Learning Design (DUA), the table shows substantial acceptance, with 53% of teachers fully agreeing that it is a good alternative to address diversity. Although 13% disagree, most support the effectiveness of DUA as a strategy for teaching English. About the accessibility of resources for students with different skills, it should be noted that 63% of teachers consider that they are fully accessible, indicating a positive general perception, although there is room for improvement, as 20% find them accessible and 17% perceive them as neutral.

Finally, the feedback provided by teachers on the use of digital resources shows a positive majority perception, since 60% fully agree that it is sufficient to improve the learning experience. Despite this, 24% disagree, noting the existence of a significant percentage of teachers who consider feedback insufficient.

Table 3

Systematization matrix on the application of digital resources to address diversity

	f	%
he English teacher before beginning the	19	19 %
teaching learning process identifies diversity in	8	8 %
the classroom	7	7 %
	66	66 %
What do you think is the receptivity of students	57	57%
to the use of digital educational resources in	11	11 %
their English classes?	32	32 %
Regarding the strategies used to address	34	34%
student diversity, do you consider the use of	13	13 %
DUA Universal Learning Design to be a good	53	53 %
alternative?		
How is the accessibility of digital educational	20	20 %
resources used in English classes for students	17	17 %
with different skills and needs?	63	63 %
With regard to the feedback provided by	16	16 %
teachers on the use of digital educational	24	24 %
resources, do you consider that it is sufficient	60	60%
to improve their learning experience in the		
field of English?		

Note: Own elaboration

Discussion of the results

At present, attention to diversity in university education has emerged as a crucial aspect to ensure equal opportunities for all students. University students possess a wide range of individual characteristics and needs, from cognitive and emotional differences to variations in learning styles and previous skills, which coincides with the survey of students, who report that 66% of English teachers if they take the time to determine the divergence in students and their educational needs. In this way, the research carried out at the Technical University of Babahoyo focuses on the use of digital educational resources in the area of English as a potential strategy to address this diversity. According to Vaillant et al. (2019), the impact of Information and Communication Technologies (ICT) on learning not only helps content to be presented from a less traditional perspective but also helps to address existing disparities in learning: this is in line with survey data, where English level 1 students are aware that the use of digital resources allows access to quality higher education focused on the needs of the 21st century and an information society.

On the other hand, the survey also indicates that digital resources alone do not solve the learning problems of students, but must be involved in educational processes, that is, they must be accompanied by theories, methodologies and strategies. This is consistent with the studies of Rodríguez and Acurio (2021), where they indicate that ICTs and digital tools do not work alone, but they need theoretical bases such as constructivism and processes such as methodologies and active strategies that allow these digital resources to become a kind of empowerment of learning and not an obstacle to it. Similarly, constructivism theory supports the positive influence of digital educational resources on language learning.

This approach recognizes the active role of the student in interacting with these resources, facilitating the exploration, experimentation and connection of new concepts with prior knowledge (Juárez et al., 2019). Although both perspectives highlight the central role of teachers, the first highlights the current challenges in the implementation of ICT in the classroom, while the second highlights the constructive potential of technologies enriching the educational experience. In addition, González and Díaz (2021) confirm that this approach highlights the active role of the student in the construction of knowledge, especially when they interact with digital resources that allow them to explore and experiment, connecting new concepts with your previous knowledge.

On the other hand, the study by Macías et al. (2021) highlights a positive and statistically significant correlation between multiple intelligences and academic performance when using digital tools starting from the wheel of Universal Design learning (DUA). The study suggests that the theory of

multiple intelligences encourages metacognition in the educational environment. This is linked to an innovative school and its components that provide innovative options to improve educational performance by using digital tools focused on academic support by different means (visual, auditory or a combination of both). Along with this, Galarza et al. (2023) indicate that the theory of multiple intelligences supports the adaptability of digital resources to address different types of intelligences, as evidenced in surveys conducted on university participants, where they argue that the use of digital tools for university students helps in an appropriate way to better recognize the academic content of the English subject. This connection with the different skills of the students highlights the relevance of integrating personalized pedagogical approaches that take advantage of the potential of each intelligence.

On the other hand, Soriano and Jiménez (2022) underline the importance of considering the diversity of skills and learning styles when designing educational strategies, providing teachers with effective tools to improve the learning experience of their students. This is in line with what students say by mentioning that teachers score better in the survey when they employ strategies focused on addressing diversity.

Thus, by considering the diversity of learning skills and styles when designing educational strategies, teachers can provide their students with effective tools to improve their learning experience, as the students indicate with their answers in the interviews. This involves the integration of personalized pedagogical approaches that take advantage of the potential of each intelligence, such as visual-spatial skills and interactive applications.

Within the criteria of the survey conducted on students, we measured on identifying educational needs and addressing them from the technology and with the use of it. In this sense, Universal Learning Design emerges as a viable solution to this diversity. Solis et al. (2022) argue that the DUA is presented as a pedagogical approach that seeks to create inclusive and accessible learning environments for all students. The removal of barriers and the provision of multiple options in the use of digital resources coincide with the principles of the DUA, ensuring that all students have access to meaningful learning opportunities. Although the research supports the integration of digital resources, it highlights the need to further investigate how these specific resources can influence attention to the diversity of university students in the area of English. This is especially important considering that learning the English language can present unique challenges for students with different skills and proficiency levels. Therefore, it is essential to explore how digital

resources can be adapted and customized to meet the individual needs of each student, thus promoting inclusive and equitable learning.

Resistance to change and rigidity in higher education, according to the research by Bravo and Santos (2019), could contradict the effective implementation of digital resources. Lack of flexibility could limit the successful adaptation of these resources, highlighting the importance of addressing institutional barriers to ensure effective implementation. Although the importance of teacher training is highlighted, the research does not delve into how the lack of this training could affect the effective integration of digital resources. Insufficient training could become a significant barrier to successful implementation, underscoring the need for specific programs that address advanced strategies for integrating digital resources and inclusive approaches.

Thus, the integration of digital educational resources to address diversity in English teaching at the Technical University of Babahoyo is presented as a promising strategy backed by sound pedagogical theories. However, the need to address institutional and professional barriers to ensure effective implementation is emphasized. Attention to diversity through digital educational resources is a dynamic process that requires a holistic and collaborative approach, where theory and practice converge to improve the quality of English learning in university contexts.

Conclusions

This research has yielded fundamental conclusions in relation to the objectives set, which focus on exploring the experiences of university students, identify barriers and facilitators in the implementation of digital educational resources adapted to student diversity, and propose strategies to improve the use of these resources in the area of English.

First, when exploring university students' experiences with the use of digital educational resources, a diversity of preferences and approaches is observed. Students are inclined towards interactive tools and platforms that allow them to actively participate in their learning process. In addition, it highlights the importance of flexibility and adaptability of resources to maintain the interest and motivation of students.

Regarding the identification of barriers and facilitators in the implementation of digital educational resources adapted to student diversity, obstacles such as lack of equitable access to devices and resistance to change by some teachers have been identified. On the other hand, facilitators include

teacher training, availability of specialized platforms and recognition of the importance of diversity in English learning.

Regarding the proposal of strategies to improve the use of digital educational resources in the attention to the diversity of university students in the area of English, several initiatives are suggested. First, it highlights the need for more specific and advanced teacher training in the effective use of digital resources. Collaboration among teachers to share best practices also emerges as an effective strategy. It also proposes exploring new platforms adapted to the needs of students and creating virtual spaces for the exchange of experiences between teachers and students.

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