THE FUTURE OF LEARNING

HOW ARTIFICIAL INTELLIGENCE IS CHANGING THE WAY WE TEACH AND LEARN

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biblioteca.ciencialatina.org
editorial@ciencialatina.org
Atención por WhatsApp al +52 22 26903834

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Autores: Verónica Fernanda Pérez Guevara, Javier Estuardo Amores Vera, Liseth Dayana Loza Alvarez, David Jesús Andrade Delgado, Daniel Efraín Ortiz Tabango
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DEDICATION

A la amistad que nos unió,

a las risas que compartimos,

a las ideas que tejimos palabra por palabra.

Este libro es más que páginas:

es memoria, es cariño, es el reflejo de lo que podemos crear cuando soñamos juntos.

Gracias por cada conversación, cada locura, cada línea escrita con el corazón.

Que este libro sea testimonio de que la creatividad florece cuando se cultiva en compañía.

Con todo nuestro cariño,

el grupo que se convirtió en historia.

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Varias veces los Libros llevan agradecimientos, en el cual el autor expresa la gratitud y cortesía por la ayuda y el apoyo recibida de otras personas en el momento de su Obra

A nuestros ángeles, en el cielo y en la tierra:

A los que ya partieron, pero dejaron en nosotros huellas imborrables de amor, fortaleza y sabiduría. Sus enseñanzas, silencios y recuerdos siguen guiando nuestros pasos. Son la luz que nos inspira desde lo alto, recordándonos que cada gesto noble, cada palabra justa y cada acto de entrega deja una marca eterna.

A los que caminan a nuestro lado en esta vida: nuestras familias, quienes con amor, paciencia y fe sostienen nuestros sueños, incluso cuando el camino se torna incierto. Gracias por su compañía incondicional, por su ejemplo silencioso, por enseñarnos que educar no solo es una profesión, sino una misión de vida.

Entre el cielo y la tierra, ustedes son faro, raíz y horizonte. Gracias por inspirarnos a ser luz, a crecer y a abrazar con pasión nuestra vocación de educar.

Con profunda gratitud,

Los autores

RESUMEN

Integrar la inteligencia artificial correctamente en contextos educativos no solo requiere avances tecnológicos, sino también un marco ético y una visión estratégica que priorice tanto la innovación como el impacto positivo en los estudiantes y educadores. Este libro busca evidenciar cómo está cambiando la manera en la que enseñamos y aprendemos, recopilando información desde enfoques teóricos y empíricos.

ABSTRACT

Successfully integrating artificial intelligence into educational contexts requires not only technological advances, but also an ethical framework and a strategic vision that prioritizes both innovation and positive impact on students and educators. This book seeks to demonstrate how it is changing the way we teach and learn, gathering information from theoretical and empirical approaches.

INTRODUCTION

With the industrial revolution, technological innovation, and technological progress, we find ourselves in a constant transformation, generating changes in the economy, society, commerce, politics, entertainment, education, and institutions of both nations. Even in the public sphere, private companies are incorporating technology and solutions based on artificial intelligence (AI) into their procedures to optimize services (Diaz et al., 2021). AI was a concept first used by John McCarthy at the Dartmouth Conference in 1956, and currently, there is no exact terminology for its definition. Estupiñán et al. (2021) define it as the application of technology to tasks previously restricted to humans, such as the generation of intelligent systems and devices like robots.

Vera (2023) argues that there are undoubtedly challenges and opportunities with Artificial Intelligence implementation in educational and university fields. One of the most significant challenges mentioned by the authors is the disparity in access to education. Although virtual education benefits many students, some do not have access to this technology, which could generate inequalities. One of the great possibilities offered by Artificial Intelligence is learning personalization; it can be tailored to each individual and provide different resources. In this context, the National Survey on the Availability and Use of Information Technologies in Households (ENDUTIH) estimates that by 2022, 93.1 million individuals in Mexico will have access to the internet."

The world is developing at an impressive pace, continually transforming classrooms into better learning places. After the paradigm of blended learning, hybrid learning, and integrated virtual education (using accredited virtual schools), we are now in the era of chat and artificial intelligence in education. (Diaz et al., 2021)Today, we support artificial intelligence in education. This is a major change in the lives of students and stakeholders. Like many innovations, many stakeholders have identified artificial intelligence in education as "disappointing." Nevertheless, it is challenging to fully accept this possibility.

Moreno Padilla (2019) argues that Artificial Intelligence implementation is becoming increasingly common in everyday life and is undoubtedly affecting education. However, by generating various components to strengthen and promote the educational system, I assure you that you will require it, to generate, and disseminate 21st-century knowledge. Similarly,

Hwang et al. (2020) indicate that its implementation propels education into a new era and offers a possibility to increase the quality of learning and instruction.

Breines and Gallagher (2023) argue that Artificial Intelligence is successfully revolutionizing conventional education, evolving from educational institutions where students are simple receivers of information to options where teaching methods are adaptable, scalable, and accessible; they indicate that they have managed to turn the school into a more active and resourceful institution. Bates et al., (2020) indicate that Artificial Intelligence implementation in education is still in its early stages because universities might not be interested in AI and fear the modifications that may need to be implemented. Therefore, it could be said that education and teaching methods are constantly evolving.

As stated by the Office of Educational Technology of the U.S. Department of Education, artificial intelligence and education have the potential to support multiple educational priorities in diverse ways. They could lower the cost of high-quality education, which remains a significant concern for many students in the United States. Furthermore, AI in education can also help reduce learning inequalities exacerbated by the pandemic.

Another important contribution of technology to the contemporary educational landscape is personalizing the learning process for students based on their personal needs. Artificial Intelligence (AI) for educators also represents an excellent way to manage tasks, even within a limited timeframe. Recent developments in technology and artificial intelligence have led to the introduction of tools such as ChatGPT in educational institutions, often described as the new AI in the classroom. Today's job requirements require students to possess advanced and specific technical skills. For this reason, educational methodologies have undergone significant transformations, moving away from merely teaching basic knowledge (Freitas et al., 2021). Higher education institutions, along with other academic entities, have begun to integrate innovative strategies into their classrooms to address these demands. Technology has taken on a crucial role in the academic field in recent years. This development has prompted universities to incorporate innovative information and communication tools, with the central purpose of optimizing resources and achieving more efficient educational processes in terms of time and results (Giró and Sancho, 2022).

According to Vera (2023), rapid advancements in Artificial Intelligence are facilitating the development of personalized courses by teachers and students, tailored to individual needs. This transformation of teaching and learning methods has significantly influenced education through the integration of the diverse tools. In addition to better alternatives for carrying out processes, it is crucial to highlight that there are also major challenges, such as the digital divide and disparities in students' access to technology.

Similarly, teachers face the challenge posed by students' inappropriate use of AI-based tools. Improper use of these technologies could negatively impact their educational process and limit their ability to develop analytical skills. According to Sanabria et al. (2023), these skills will be crucial in the jobs of tomorrow, especially considering a potential work environment marked by widespread automation. Consequently, individuals who combine technical knowledge with interpersonal skills are more valued.

Nowadays, we can see Artificial Intelligence being applied to a greater or lesser extent in different sectors and processes. For example, in the educational field, it has been noted that today's students no longer look for information in books but on the Internet. The landscape has changed significantly over the past 20 years, with rapid advancements in technology transforming the education sector and influencing how graduates enter the job market.

The purpose of this text is to examine how artificial intelligence is changing the ways we teach and learn. We are currently in an era of AI that affects several fields, including education, changing and reinventing traditional educational methods. One of the goals in using this technological advancement is to enable adaptability and personalized learning to demonstrate student strategies and effectively communicate knowledge promptly that will be useful for future work (Moreno, 2019). Artificial intelligence revolutionizes education by automating processes, adapting learning, optimizing assessment, and expanding access.

Therefore, it can be included in educational programs to prepare, train, and specialize increasingly connected global generations to be more competitive. It is important to analyze different approaches. Sambola (2023) argues that the implementation of artificial intelligence in the field of education will allow for more versatile teaching and learning methods, adaptation to student needs, creating intelligent learning environments, improving knowledge, and representing a revolution in educational services with many options.

Modern educational tools encompass decision-making algorithms, virtual assistants, specialized applications, machine learning, knowledge maps, linguistic processing, intelligent web, data analysis, and big data, and provide support for both teachers and students to achieve outstanding results (Barrios et al., 2021). Thus, artificial intelligence is beneficial in areas such as mathematics, computer science, economics, engineering, biology, and philosophy, among others. At the same time, its focus lies on technical systems, defining itself as a computational model that emulates contemporary human intellectual capacities. Another relevant aspect includes the advanced technologies implemented in classrooms (Barrios et al., 2021). In this sense, artificial intelligence is expected to impact all components of the educational field.

For this reason, Herrera and Ochoa (2022) indicate that the relevance of the use of information and communication technologies (ICT) in the teaching process has increased. As education evolves in response to emerging technologies, these advancements exert a significant influence on society by shaping individual and collective behaviors. Simultaneously, Freitas Santos et al., (Freitas et al., 2021) argue that, since the emergence of the Internet and its application in classrooms, the relationship between teaching and learning has undergone important transformations, leading to the elimination of some pedagogical barriers.

According to Moreno (2019), artificial intelligence represents a critical development in education, as computers serve as essential tools for information retrieval and network access. This use favors the development of research and teacher training strategies, which in turn provides students with better learning conditions. Therefore, artificial intelligence is considered a growing innovation that optimizes training processes and empowers students to face the labor challenges of tomorrow (Haan, 2023).

However, in terms of adaptation, Artificial Intelligence presents both benefits and drawbacks to people, raising doubts about the future of work and the opportunity for job replacement. Currently, the implementation of artificial intelligence is being observed in various industries, assisting employees in improving processes, but also recognizing the limitations that its rapid introduction into the market entails and the risk of compromising their jobs (Rouhiainen , 2018). Additionally, Forbes Advisor magazine (Haan, 2023) presents 24 AI statistics and trends for the year 2023, highlighting the impact that AI implementation will have in the coming years.

Initially, the goal of education was to impart religious doctrines and develop a workforce equipped with basic skills. Today, things are more advanced, and education has undergone changes and evolutions to meet society's demands. Currently, the implementation of a flipped curriculum is both practical and recommended, as it emphasizes preparing students for real-world employment through internships and the application of knowledge, while minimizing the time dedicated to theoretical instruction in the classroom (Homes et al., 2019). Consequently, artificial intelligence has been incorporated into the educational field in recent years to optimize learning processes, making them more interactive and producing improvements in students' academic performance. These tools encompass diverse technologies such as virtual reality, augmented reality, video games, and applications. Through these innovations, teachers have the opportunity to provide higher-quality teaching and foster more effective educational processes among students (Fajardo et al., 2023). One of the strengths of not directly relying on these technologies is having analytical systems capable of processing large volumes of data to monitor and detect if any student needs additional support.

With the explanation gathered, various training styles can be proposed and techniques can be lowered to protect the individual evacuations of each student. The training indicates that personalized training is adequate and efficient (Gazquez et al., 2023). Thus, although the emergence of Artificial Intelligence is not a recent phenomenon, the extent of its impact on society remains uncertain. Many specialists should perceive this not as a danger, but as an opportunity, a field of study, a tool that facilitates the growth and development of training strategies, creating new areas, reducing training obstacles, and automating processes and procedures. The outcome, whether safe or not, is what is anticipated. In the current context, it is critical to emphasize that there are human attributes that cannot be supplanted by others (Moreno Padilla, 2019). Urquilla (2022) identifies four notions or components within educational progress that can be impacted by AI: content, teaching methods, assessment, and communication.

Ouyang and Jaio (2021) add that the authors argue that robots in the classroom can also be used as teachers, adaptive learning systems, and human-computer interactions; they recognize three paradigms used in education linked to Artificial Intelligence; direct, compliant, and empowered. According to the Stanford University 2021 AI Index Annual Report (Stanford

University, 2021), between 2016 and 2020, the number of university courses that incorporate skills for implementing AI in the academic curriculum increased from 102 to 207 in the previously mentioned years.

Thus, although the development of Artificial Intelligence is not a recent phenomenon, the full extent of its societal impact remains uncertain. The authors argue that AI can be used in early childhood education to engage through pronunciation and spelling, find data on assignments, and optimize university education and management processes.

Artificial intelligence implementation in education presents multiple challenges. Ethical frameworks have been created to facilitate its integration, although it is anticipated that this technology could widen the gap between students and adults. (Diaz et al., 2021)Among the main problems are academic gaps stemming from economic inequalities, potential privacy risks associated with the massive use of data on networks, and the idea that artificial intelligence could replace jobs, including those of teachers, with machines and robots. For this reason, ethical guidelines have been established to mitigate risks and uncertainties before introducing this technology into classrooms, thus promoting responsible and conscious use (Zhai , 2022).

THEORETICAL FRAMEWORK

The Transformation of Education with Artificial Intelligence

Artificial intelligence is profoundly transforming both student learning processes and the methodologies used by educators. For a long time, educational systems have been based on conventional structures that, in many cases, do not respond to the demands of the contemporary world (Freitas et al., 2021). However, AI has introduced a range of possibilities that have allowed education to evolve toward a more flexible, engaging approach tailored to the individual needs of students.

Artificial intelligence has brought about significant transformations in education by allowing teaching methods to adapt the unique characteristics of each student (Díaz et al., 2021). Technologies such as virtual assistants and automated progress assessment systems offer students the opportunity to progress at their own pace and receive personalized guidance based on their performance. These advancements not only enhance the learning experience but also reduce administrative workloads for teachers, allowing them to concentrate on more strategic and innovative educational practices (Haan, 2023). From my perspective, experiences with conventional educational models highlight the critical need to integrate AI-based tools (Estupiñán, Leyva, Peñafiel, & Assafiri , 2021). Many traditional pedagogical approaches remain backward and do not equip learners with the skills needed to face contemporary workplace demands. AI-powered solutions have the potential to bridge this gap, ensuring that new generations are prepared to face the challenges ahead (Sambola, 2023).

Innovation in the Classroom: AI as a Driver of Educational Change

Educational transformation finds innovation as one of its essential drivers, and artificial intelligence is positioned as a key means of bringing about significant changes within the school environment (Freitas et al., 2021). By implementing digital platforms that facilitate access to remote classes, unprecedented horizons are opening up for engaging with learning through the design of algorithms capable of evaluating both students' actions and achievements.

One of the most critical challenges facing the contemporary education system is its lack of consistency and adaptability in the face of ongoing change. A considerable portion of the teaching force remains wedded to conventional pedagogical approaches, resisting the incorporation of artificial intelligence as a complement to optimize their work (Giró y Sancho, 2022). However, AI-based tools play an essential role in stimulating learners' imagination, analytical reasoning, and creativity. Furthermore, they empower the training of new generations to more effectively meet the changing demands of the professional environment.

The use of virtual reality (VR) and augmented reality (AR) will transform educational spaces, giving students the opportunity to participate in immersive experiences that enrich learning. These tools open up opportunities to interact in environments that replicate real-world situations. For example (Rouhiainen, 2018):

Applications of Artificial Intelligence in Education

Artificial intelligence offers multiple solutions within the educational field, both for optimizing resource use and strengthening academic administration. Some of the most notable uses include (Barrios et al., 2021):

- Virtual Tutor: A program that acts as a learning assistant, guiding students through complex tasks and providing personalized, tailored feedback. These virtual tutors can adapt to each student's needs and provide more integrated training.
- Auto-Grading Assessment: A tool that allows teachers to automatically modify tests and assignments, not only speeding up the grading process but also ensuring that all students are graded on the same criteria.
- Predictive analytics: Advanced learning systems help examine student behavior, predict past performance, and identify individuals who need additional support before difficulties become major problems.

The integration of these technologies significantly transforms educational methodologies by increasing the efficiency of classroom activities and enhancing student learning outcomes (Estupiñán et al., 2021). These tools represent an essential resource for closing educational gaps, ensuring equitable access to materials and opportunities for students at different levels.

This technological integration not only improves the educational experience but also prepares students to face the challenges posed by a constantly changing work environment.

Use Cases: Concrete Examples of the Impact of AI in the Classroom

Artificial Intelligence-based technologies open up a range of opportunities to transform education. A concrete example of their impact is the implementation of adaptive platforms. These solutions allow teaching content to be adjusted to the pace and level of progress of each student, ensuring a more personalized and effective learning experience. Tools such as Dreambox and Smart Sparrow illustrate this model, demonstrating how AI can support academic development through methods specifically designed to maximize student performance and understanding (Giró and Sancho, 2022).

Another relevant example is the integration of artificial intelligence into language learning programs. Tools like Duolingo employ advanced algorithms that adjust lesson content based on each user's proficiency level (Haan, 2023). This allows for the design of more dynamic learning experiences tailored to students' specific needs, thus facilitating more efficient progress in language acquisition.

Universities around the world are turning to artificial intelligence to optimize their academic and administrative processes. This includes automating activities such as curriculum planning, resource allocation, and other aspects of educational management. This approach allows for more efficient use of time and resources, channeling them toward improvements in the student experience (Vera, 2023). Additionally, customized AI-based systems, such as chatbots or private virtual assistants, have been developed to provide guidance and address specific student concerns. These tools represent an advanced solution that improves interaction between educational institutions and their communities, offering rapid responses tailored to the needs of each student. Their implementation marks a shift toward more accessible and efficient management.

Examples of custom AI for digital conversion created with content from the Stratedgedigital Book (PDF), various articles by various authors, Leaf of PDF, Male learning or course material, other examples of course logistics materials. A simple teacher assistant that students can use.

Disadvantages and Challenges of AI in the Educational Environment

Although artificial intelligence offers significant advantages in education, its adoption also presents complex challenges. One of the biggest obstacles is the technological disparity between institutions that have access to these tools and those that lack the necessary resources to implement them. This inequality could widen existing educational gaps, particularly affecting students who lack the opportunities to take advantage of these innovations (Barrios et al., 2021).

Data protection is at the heart of the discussion about the use of artificial intelligence in education. This type of tool requires managing large volumes of personal information, which poses serious challenges regarding the privacy and security of student data. Without proper management, there is a risk of compromising not only user trust but also the integrity of educational processes (Freitas et al., 2021). Therefore, institutions must implement specific standards governing the storage and use of this information. These guidelines should ensure that data is handled responsibly and used exclusively for academic purposes. Additionally, it is crucial that students and their families understand how their data is used, which fosters transparency and strengthens trust in these technologies (Sanabria et al., 2023).

Furthermore, current algorithms present a significant challenge for the education system, especially if the development of these technologies relies on biased data sets. In such cases, the use of these tools can perpetuate or even intensify existing inequalities, adversely impacting certain groups of students. This underscores the importance of ensuring that the data used in training algorithms is inclusive and representative, thereby reducing the risk of bias in the results. (Haan, 2023)To address this problem, it is crucial to implement rigorous review and adjustment processes that eliminate potential bias. At the same time, it is necessary to promote the participation of diverse stakeholders in the design of these technologies, ensuring that their development benefits all students without exception.

Ultimately, resistance to change among some educators remains a barrier. The use of artificial intelligence requires significant adaptation to teaching methods, and many teachers are unsure of how effective these tools are in their lessons.

Vision for the Future: Education Powered by Artificial Intelligence

In the long term, artificial intelligence has managed to completely reshape the way we empower a new generation. AI can not only simplify and facilitate learning, but it can also foster a culture of innovation and creativity in the classroom. Students not only acquire knowledge to consume information, but also to independently generate and solve problems.

More artificial intelligence is expected to be added to the classroom in the coming years. Technologies such as augmented reality and teaching robots are expected to change the way students engage with content. Artificial intelligence plays an important role in promoting 21st-century skills.

In my opinion, this transformation is crucial to equip students for an uncertain yet potentially exciting future. Artificial Intelligence should not be interpreted as a danger, but rather as a powerful resource capable of improving the lives of millions of students around the world and providing the skills and knowledge required to face the global challenges of the future.

Educational Innovation + AI: How Does It Work Today?

Today, artificial intelligence continues to explore its vast potential to transform the education sector. Its impact is already evident in tools such as virtual assistants designed to support students, the automation of administrative processes that benefit teachers, and digital learning environments available at any time (Van Dijk, 1993). These innovations not only optimize academic administration but also strengthen learning systems by enabling more efficient management. The possibilities of general technology and AI are particularly important for Latin America and the Caribbean. The Caribbean is a region with an education system facing significant structural challenges.

Potential of new technologies in educational management

Technological advancement has the potential to address and improve the management of three fundamental challenges in education:

- Early disengagement alarm

- One of the most significant challenges facing the region's education system is the high dropout rate, with 36% of young people failing to complete secondary education. In response to this problem, early warning systems were implemented in Mendoza (Argentina) and Uruguay, with support from the Inter-American Development Bank (IDB). These initiatives employ machine learning techniques, allowing for early identification of students at risk of dropping out and providing them with the necessary support to continue their academic education.
- Instead of receiving data when students are released, these tools provide a “card” at the beginning of the year that identifies which students are potentially at risk.

AI to accelerate learning and promote inclusion

The use of technology represents an essential support for overcoming challenges in education, particularly in crucial disciplines such as language and mathematics (Bates et al., 2020). Among the most relevant innovations are artificial intelligence-powered applications designed to assess and improve skills such as reading comprehension and mathematical problem-solving. These tools can detect each student's areas of need for improvement and propose personalized approaches, with the aim of optimizing their performance and narrowing the gap in proficiency levels.

The project, combined with virtual reality, was developed to improve literacy among children with dyslexia and influence education. This initiative is fostered through conversation and digital educational resources. These types of platforms provide a great opportunity to meet the specific needs of each student and utilize new technical tools.

AI for personalized assessments

The integration of artificial intelligence has the potential to revolutionize assessment methods by introducing a more personalized approach tailored to each student's individual needs. This facilitates processes such as self-assessment, in which students can more accurately identify areas for improvement (Vera, 2023). Furthermore, systems supported by this technology can provide instant feedback, clearly indicating the areas students should focus on and the resources needed to achieve their goals.

However, beyond technological innovations, the real challenges lie in the structural roots of the education system. Problems such as persistent inequality in access to opportunities and the limited quality of education in many regions represent significant barriers. Addressing these challenges requires coordinated efforts that combine the use of advanced tools with policies that seek to eliminate these gaps and guarantee comprehensive and equitable education (Sanabria et al., 2023).

Benefits of Using AI for the Future of Education: Navigating the Present

In the current educational landscape, there are two main trends. On the one hand, rapid technological evolution is driving significant changes in teaching, while on the other, traditional methods persist, lagging behind the demands of the present. Artificial intelligence is positioned as a key element in leading this transition, paving the way for a more dynamic educational model adapted to contemporary realities. (Barrios et al., 2021).

The incorporation of AI-powered tools transforms both the efficiency and traditional approaches to educational processes. Its use promotes equity by ensuring that all students have access to high-quality resources and opportunities. Furthermore, this technology serves as a means to foster inclusion, as it allows for adjustments that favor a wide variety of specific realities and requirements (Freitas et al., 2021).

- Lessons made easy: Teachers can automate administrative tasks with AI, freeing them up to focus on the classroom. Personal interactions become the main focus.
- Stimulate individual and group learning: The intelligent tutor system can adapt to each student's learning needs and promote more effective, personalized, and engaging learning.
- Students can actively interact with AI systems, monitoring their performance and leveraging the tools they offer. AI algorithms, in turn, are designed to monitor students' academic progress in real time, identifying both strengths and areas that require additional attention. Through this dynamic, immediate feedback is provided, facilitating a deeper understanding of the topics and helping to reinforce knowledge retention.
- Promoting connection and inclusion: AI systems can adapt to all students' needs, regardless of their abilities, background, and physical and intellectual abilities, thereby affecting the positive impact of educational connection.

- Combat School Development: AI can identify students at risk of graduation and provide early intervention.

Steps toward the future: integrating AI into education

A future where Artificial Intelligence is deeply embedded in education offers a promising scenario for redefining learning practices. Below, I present five outstanding ways to integrate this technology into the classroom and enhance teaching with a personalized approach (Estupiñán et al., 2021):

- The use of artificial intelligence in remote assessment offers an innovative solution that transforms the educational process, especially in the area of assessments. These tools allow for remote proctoring of exams and assignments, providing greater flexibility for both students and teachers. By implementing this approach, students can take assessments in more accessible and comfortable environments, optimizing their performance.
- Implementation of an online learning system: Artificial Intelligence enhances educational experiences in virtual environments and can be tailored to students' personal tastes and abilities. This will allow for more interactive and personalized teaching.
- Collecting and analyzing data from educational institutions is a task in which Artificial Intelligence can play a crucial role. This technology allows for the collection of detailed information and its in-depth analysis to recognize patterns, detect trends, and identify areas for improvement. This process facilitates more informed decision-making, helping to adjust and refine educational practices more accurately and effectively, thus ensuring a positive impact on the quality of teaching.
- Artificial intelligence has the ability to design highly personalized educational content, adapting to the specific needs and characteristics of each student. This approach allows for the development of curricula that are not limited to general adaptations, but rather respond specifically to each student's skills, interests, and areas for improvement.

The challenge of using AI in education responsibly

The responsible use of artificial intelligence in education involves not only leveraging its advantages but also recognizing and addressing its limitations. Although AI can significantly improve teaching and learning processes, it cannot replicate aspects inherent to human

intelligence, such as creativity, empathy, and critical judgment. These nuances are essential for comprehensive and enriching educational development.

- Lack of practical adjustment: While AI in education is intended to adapt to individual students' needs, there is a risk that adjustments will be superficial and the complexity of each student's learning process may not be adequately reflected.
- Equity: Although Artificial Intelligence has the potential to promote more inclusive access to education, it can also perpetuate or intensify existing inequalities within the education system. An example of this is that AI algorithms could benefit those with greater access to technology, leaving students with limited access to devices or internet access at a disadvantage. These types of scenarios underscore the importance of designing AI-based solutions that consider digital divides and ensure equitable implementation.
- Privacy and Security: The input and use of personal data in an AI educational environment can take into account student data protection and information security concerns. Even when interacting with technology like chat, it's important to ensure robust measures are in place to protect sensitive information. We encourage you to review this post for more information.
- The quality of the educational content processed by artificial intelligence is a determining factor in its effectiveness as a learning tool. Since AI relies on analyzing and reproducing the data with which it has been trained, any weaknesses in that data will have a direct impact on the results. If the content provided lacks depth, accuracy, or relevance, student learning may be compromised, perpetuating errors or conceptual limitations.

The responsible integration of AI into education is not only inevitable, but also crucial to ensure the continued availability of comprehensive learning. By understanding its current state, utilizing its advantages, and exploring future paths, you are ready to leverage not only education but also the strength and future of educational technology (Haan, 2023).

Artificial intelligence plays a crucial role in achieving educational goals and sustainable development goals. This technology not only facilitates training in essential skills but also promotes equal opportunities and contributes to eliminating gender barriers. These tools enhance inclusion and promote equitable access to educational resources (Estupiñán et al., 2021).

It's important to emphasize that artificial intelligence isn't just a projection of the future of education. Its impact is already palpable, with applications redefining teaching and learning methods. From personalizing content to creating more dynamic environments, this technology comprehensively transforms the educational experience, aligning it with the challenges and demands of the 21st century. (Sanabria et al., 2023).

On the other hand, it is essential to move toward a responsible integration of these tools, assessing both their strengths and limitations. This requires a commitment from educational policies to ensure a balanced implementation that respects the principles of equity, quality, and transparency. In this context, artificial intelligence becomes a strategic ally that not only revolutionizes education but also provides concrete solutions to social and economic challenges (Barrios et al., 2021).

METHODOLOGY

This chapter presents the methodological elements of the research, beginning with an explanation of the study's approach and design; and then, the procedures used to collect data for the study in question. Finally, the methods used to analyze the information facilitated obtaining the findings of this study. This study considered the use of scientific research techniques that enable the analysis and interpretation of the results in a consistent and organized manner, to understand the connection between the proposed problem and the derived conclusions. Therefore, the procedures and techniques used are crucial for research management.

Nature of the research

Mixed-method testing was conducted as support for the real-life section of the text. This addresses the most relevant aspects of how AI teaches and alters the way it learns. Therefore, this study seeks to explain the changes and impacts of this new technology as part of the educational process. Therefore, its approach is mixed-method, as this type of study allows for an impartial analysis of facts to begin with. According to Ruiz (2012), qualitative methods "from the perspective of an insider, capture a particular sense of reality that each event conveys to its own protagonist and view these components as a systematic sentence" (p. 17).

This method, which is more adaptable in the scientific field, provides researchers with the resources they need to achieve their desired results. Maxwell (2004) shows that, in addition to inductive and hermeneutic processes and tactics, interest can be emphasized under the advantages provided by exploring meaning and interpretation, qualitative methods that can emphasize contextual relevance.

Mixed research

This study uses a combined methodological approach. This means combining qualitative and quantitative approaches into a single essay. This involves recording, analyzing, and interpreting qualitative and quantitative data, creating both types of conclusions (Hernández et al., 2016).

Both methods allow for a more in-depth approach to the problem proposed above, allowing us to understand different facets of reality and comprehend it in diverse ways. The

combination of these two approaches, qualitative and quantitative, provides relevant elements with their own opportunities and limitations. This method enables a more detailed study of the forms of change and impact of AI during the evolution of educational processes and its relevance.

Qualitative research

Qualitative research focuses on the in-depth study of activities, interactions, themes, resources, materials, or tools associated with a specific situation or problem (Hernández et al., 2016). This approach prioritizes the interpretation and analysis of data obtained through formal collection methods, such as questionnaires or interviews, which allow for a thorough exploration of the issues at hand. Its qualitative nature lies in the fact that data are recorded without focusing on quantities, and are subsequently guided by detailed analysis and interpretation.

Quantitative research

"Quantitative research requires the use of technical, statistical, and mathematical tools to reach conclusions" (Hernández et al., 2016). It promotes a numerical understanding of how a phenomenon or problem develops and determines whether it is defined by previous results that control or support the results obtained.

The range is exploratory because it captures possible causes and can directly record information. This factor is an important characteristic of quantitative testing, since everything is based on the information collected, and researchers are known to prepare and receive the information they need from the target group. Therefore, this study is also quantitative, since data collection is done to test hypotheses based on numerical measurements and statistical analysis.

Scope of the Research

As the approach in question was achieved in the first stage, there is an explanatory approach to research. During descriptive research, identifying the characteristics of a particular problem associated with the effectiveness of AI and the ability to identify it as an advantage and obstacle to promote education and recognize its implementation in organizational training in

the context of social management. In this context, this type of descriptive research has allowed the observation, documentation, examination, and interpretation of the nature, structure, or current processes of the Tamayo phenomenon (1998).

Research Design

Research design refers to tactics that require data to be recorded. In this study, non-experimental and transactional designs were employed to describe individuals in their natural state, minimizing the introduction of changes or variables, and examining their responses. According to Hernández, Fernández, and Baptista (2014), research designs are proposed to answer research questions and achieve specific objectives. Therefore, this design serves as a tool to provide a comprehensive explanation of how AI transforms the methods of learning and teaching. The current study has an important professional design, since its actions maintain the source information for subsequent analysis and, therefore, know the terminology relevant to the research question. According to Hernández et al., this examination (2014) suggests the process of executing information as a characteristic and, therefore, suggests a qualitative characteristic and, therefore, a conclusion and conclusion "(p. 534). This is due to the diversity of reality compared to AI and mainly educational cases. A methodology is needed that allows the organization of actions that wish to receive optimal information to support the objectives defined in this study.

Types of Research

It should be a descriptive statement. This is based on the use of information to detail the research objectives, in this case, the impact of AI on education. This information provides clear insights into its benefits and obstacles, suggesting its application to education through bibliographic writing. Bibliographic reviews were used and marked for books, magazines, newspapers, general documents, and the Internet. This information can be obtained through scientific reading scribes or digital texts (Tamayo and Tamayo, 2017).

Materials

To develop this work, we utilized specialized databases and conducted searches focused on topics related to education, technology, and both national and international relations. Sources

published within the last five years were included, such as books, academic articles, research reports, and congressional legislative documents (Hernández et al., 2014). All the information collected was categorized, sorted, and coded. It was then organized in a structured manner to select the most appropriate content for a particular topic, taking into account the most relevant inclusion criteria.

To obtain more detailed information, we are searching for a primary database to gather sufficient information to understand the issues presented. Specifically, the following reviews are Redalyc, Dialnet, Scielo, Science Direct, and several university repositories. The inclusion criteria used were articles in Spanish that addressed the context of Latin American and Ecuadorian micromatrices. Furthermore, the keywords used were primarily "education" and "learning." Limited searches only returned these two terms.

To develop the result process, we have a procedure structured as follows:

- As mentioned above, a general search was conducted in the designated repository between 2020 and 2024.
- The main articles are grouped together, thus creating the first database.
- Each content was cleaned according to:

a) Eliminating the repeated.

b) Those published in languages other than Spanish or English were ignored;

Classifying the articles like this:

- Central, emphasizing the impact of AI .
- Next, use of technology in education .
- Collateral, teachers .

The following criteria are defined in more detail:

Inclusion criteria

The inclusion criteria defined for this literature review are as follows:

- Research published in scientific journals with factors influencing Spanish and English that prefer qualitative types.
- Research published by specialists, especially those with experience in education and technology.
- Accredited academic works: bachelor's degree, master's degree, doctoral studies and conferences from no more than 5 years ago (2020-2024).

Exclusion criteria

The exclusion criteria defined for this preliminary literature review are as follows:

- Works that refer to very general topics without approaching the object of study.
- Development and publication period prior to 2020.

Techniques and instruments for data collection

This section presents a method by which the data needed to diagnose the effectiveness of AI in education can be recorded in the same way as the equipment that acts as a collection mechanism in this regard.

The technique for gathering information is the information proposed by Creswell (1997) where detailed explanations of the facts are made, monitoring is done and information is made in various sources of the database, so in this way, the aspects of AI can be eliminated in training and the type of teaching and learning in the new era of training. All of this was achieved through systematic procedures to test, collect, and compile information from various sources. Therefore, literature reviews were used to collect data. "This is understood as 'a process in which information is gathered from primary sources.'" (Monk, 2012). On the other hand, documentary reviews are defined as "...the process of requesting a review of various documents for information on a particular research topic..." (Monk , 2012). This allowed for the identification of important documents related to the research purpose (Bernal Torres, 2016, p. 256).

One of the most important aspects of the research process is obtaining information. This depends on the reliability and validity of the case study. Obtaining information that is both contradictory and truthful requires great commitment and care. This recording of data and

information is a means by which hypotheses are tested, answering the questions generated in the study, and achieving the objectives specified in the study based on the research questions.

It is worth noting that not all techniques and instruments apply to all research results. However, the tendency is to use a variety of techniques and instruments that complement each other in the research process, as no single technique or method can fully capture the complexity of reality. Although various techniques were used in this study, it is undoubtedly clear that, in addition to virtual ethnography and the use of the Internet, today's Internet offers the opportunity to receive information. It is one of the main sources for gathering information.

The data and information capture process involves a structured series of steps. These are:

- Be clear about the objectives and hypothesis variables (if available) proposed in the research study.
- The selection of sample and/or population of research objects was selected.
- Define methods for obtaining wheel information, developing techniques and equipment, and verifying them.
- Gather and process information before processing it for each table, description, analysis, discussion, conclusion, and verification.

Analysis tools

The content analysis of the impact criteria is conducted using the aforementioned documentary film material. Content analysis is a methodology that includes many methods for objective, systematic, and quantitative explanations to understand the interpretation of a message. Bardin (2003) points out that content analysis derives knowledge from qualitative indicators related to production conditions.

According to Bernal Beresol (1980 Dijk and Rodrigo M., 1999), it refers to "a technique that allows an objective and systematic explanation of the material obtained through oral or written communication" (p. 104). The purpose of this technique is to analyze, interpret and understand the materials obtained from a variety of sources with respect to general denominators.

Discourse analysis

This analysis is a technique that examines the relationship between communication format and function. It also examines theory, conversation, messages, and language in almost all fields of the humanities and social sciences (Van Dijk, 1993). One of the reasons why discourse analysis is better for analyzing published content in the field of study is the fact that this technology receives media information as a complete discourse, preferring to explain qualitative data from it. In particular, it fails to consider the effects, requirements, and connections implicit in discourse.

Similarly, discourse analysis can be used in qualitative studies. This study analyzes the argumentative representation of findings and focuses on factors such as problem justification, objective explanation, and historical overtones related to educational aspects (Sayago, 2014).

Discourse analysis is based on a three-dimensional relationship between texts, argumentative practices, and social practices. This model involves designing and analyzing debate events with three facets or dimensions.

(i) Text (part of written or spoken language).

(ii) The case of argumentative practices (discussion practices) that influence the production process and the interpretation of texts.

(iii) section of a social exercise, in terms of the situational and institutional environment of the discursive argument (Fairclough , 1989). The previously mentioned dissections are carried out with the foundation of widget (NoRAE) Atlas Ti 9.

RESULTS

Artificial intelligence has emerged as a fundamental pillar for transforming the educational field, offering solutions that optimize both the efficiency and quality of the teaching and learning process. Its increasing accessibility has allowed institutions across diverse disciplines to adopt these technologies, leveraging their ability to provide personalized feedback and conduct precise analysis through data collection (Barrios et al., 2021).

Since 2021, and largely driven by the challenges presented by the COVID-19 pandemic, there has been a notable increase in interest and research related to the use of artificial intelligence in education. This context has highlighted not only the need to adopt innovative technologies but also their potential to redefine pedagogical strategies and offer more equitable and inclusive opportunities to a diverse range of students (Freitas et al., 2021).

One of the most significant challenges lies in the data quality used for analysis and feedback. IAS requires accurate and representative information to create tailored feedback. If the information is inaccurate or inconsequential, AI can provide false or useless opinions. This could adversely affect student progress.

Another relevant issue is the distrust of Artificial Intelligence among teachers and students, as well as their opposition to change. The automation of specific tasks and the dependence on technical tools can raise concerns about the role of teachers in teaching and the quality of human interactions required for successful education. Additionally, concerns could arise regarding privacy and student data protection.

Artificial intelligence is presented as a highly valuable resource in the education sector due to its notable influence on optimizing the quality and efficiency of pedagogical work. Thanks to its ability to adapt teaching and learning processes to the specific needs of each student, teachers can dedicate more time to strategic tasks. Students, for their part, access learning experiences specifically designed to meet their unique needs, promoting more efficient and effective progress in their education (Vera, 2023).

To capitalize on the opportunities offered by artificial intelligence, it is essential to adopt an approach based on ethical principles and responsibility. This requires the development of

precise guidelines that promote equity, safeguard data privacy, and ensure that this technology supports human labor rather than replaces it. These initiatives are key to addressing the challenges associated with its implementation and ensuring that the resulting benefits are long-lasting and generate a positive impact (Haan, 2023).

It is important to recognize that the development and adoption of these tools will not only transform education but will also have repercussions across multiple sectors. Professions and activities will be redefined, requiring adaptations in both work practices and the preparation of future generations. Therefore, it is necessary to foster a balance between technological innovation and human values, with a constant commitment to the comprehensive improvement of the education system (Barrios et al., 2021).

Today, we must understand that talking about artificial intelligence (AI) is a field that is still not fully understood by many, but its beginnings have come from the 30s. According to the Royal Spanish Academy (2023), you should know its definition, "operations comparable to scientific fields that deal with computer programs, operations comparable to human minds, such as learning and logical thinking ." This means that it is a scientific contribution that generates automated processes in various fields to help people.

This publication has made it possible to discover and use AI in various areas. However, the field of education is not yet fully developed, as it is expected to build appropriate educational skills (Padilla, 2019). In this sense, we must understand that the lack of AI development in the field of education leads to abuse. In other words, analysis is conducted to facilitate the appropriate application of these tools. This has led to an increased use of digital tools, which was accelerated by the pandemic, and has opened up opportunities for innovation in the post-pandemic era.

The COVID-19 pandemic should be remembered as a story of people forced to suddenly shift research modalities to virtual, to maintain social distancing. This campaign left a severe gap in the use of technical resources (Selwyn et al., 2022). The experience and qualifications of some teachers revealed inequality of opportunity, as not all internet services and electronic devices were financially limited. Therefore, it is hoped that the proper development and application of AI will not affect the social groups concerned with protection.

Artificial Intelligence is committed to improving educational quality in all areas and levels. This facilitates learning to achieve greater learning and adapt to the varied demands of students (Ocaña et al., 2019). Achieving this, requires a combination of daily activities, interaction with others, and the use of digital tools, as well as an understanding of each individual's unique characteristics and limitations.

Based on the above information, this study should be an important contribution to finding effective solutions to problems. Why is it important to recognize your advantages? Ayuso and Gutiérrez (2022) argue that AI provides both academic and emotional benefits for students and teachers. It should be understood that AI-based educational processes form a variety of options. As a result, students have the right innovative plans to learn joy. However, in the case of inappropriate use, the previous effects can have the opposite effect on the above objectives.

The inappropriate use of artificial intelligence in the learning process can lead to many situations. This is due to students copying information for educational work in this manner without prior analysis. Many responsibilities, ethical principles, and values are violated (Breines y Gallagher, 2023). Considering the perspective of the previous author, it is necessary to limit the ability to analyze, integrate, and reduce the originality of the work to contribute to their own ideas. As a result, the risk landscape creates the normalization of academic injustice in the educational process.

The analysis of artificial intelligence applied to higher education has shown significant progress in the last five years, highlighting both the possibilities and challenges inherent in this field. The research reviewed reflects a consistent inclination toward the use of adaptive systems that adjust to the specific characteristics of each student, promoting more focused and effective instruction. This methodology not only enhances the quality of the academic experience but also profoundly transforms traditional perceptions of teaching and learning (Díaz et al., 2021).

Research also highlights the influence of artificial intelligence in the field of educational management, enabling greater efficiency in administrative tasks and supporting informed decisions through data analysis. These tools not only provide significant benefits for students but also represent a valuable resource for teachers and administrators, who can design more effective learning spaces that are adaptable to current needs (Giró and Sancho, 2022).

Looking ahead, artificial intelligence is poised to profoundly transform higher education, fostering the development of intelligent technologies and redefining practices across diverse disciplines. This change will not only affect the way we teach and learn, but will also influence how educational phenomena are perceived and addressed. Empirical research has focused on analyzing the impact on student training and explaining artificial intelligence as an application, with theorists questioning the relationship between teachers and education and the relationship between students and learning (Barrios et al., 2021).

This approach is necessary not only for teachers and students to use this technology, but also for developing ideal options that enable superior performance and the maintenance of human capital. It is important to highlight that artificial intelligence represents a technology of immense market value, both in today's global context and within the educational sector. Its integration marks a significant milestone in the transformation of traditional educational paradigms, redefining how knowledge is delivered, assessed, and acquired. This directly impacts the educational process and its management system.

The incorporation of artificial intelligence into education, along with dynamic networks and ecosystems, has laid the foundation for a more adaptive and effective educational model. For effective implementation, it is crucial to consider not only technological advancements but also the ethical implications and challenges related to managing student data within university environments" (Giró & Sancho, 2022). Data collected through AI-based systems must be managed with an approach that ensures its reasonable and secure use. This requires institutions to adopt measures to ensure the protection of students' privacy and confidentiality. A European Commission report emphasizes the importance of educational technology providers implementing practices that promote transparency and accountability in the processing of personal data, reflecting a commitment to user well-being and trust (Barrios et al., 2021).

Artificial intelligence represents an unprecedented opportunity to transform education at multiple levels. Its ability to personalize learning processes allows it to meet the specific needs of each student, improving not only the academic experience but also the outcomes achieved. At the same time, its implementation optimizes the quality of teaching by offering innovative tools that support both teachers and students. Likewise, artificial intelligence contributes to

more efficient management of educational resources, facilitating strategic decision-making and academic administration (Freitas et al., 2021).

Academic institutions must continue to explore and expand the potential of these technologies. Addressing these challenges requires continuous research on the applications of artificial intelligence, along with interdisciplinary dialogue that brings together pedagogical, ethical, and technological viewpoints. Collaboration across different sectors is essential to ensure a balanced implementation that not only drives innovation but also fosters equity and sustainability in education. (Vera, 2023).

Prospects show that AI will be strongly integrated into university education, continually improving the human-machine approach and the system's adaptability to teachers, students, and administrative staff. Furthermore, technical equipment should be used to generate motivation and interest in the learning process to promote constant updates to teaching strategies. Computer programming content should be included in higher and higher education institutions to train students in managing digital resources and encourage an understanding of creating new methods.

Therefore, participants are aware of the use of AI in education and the improved performance and further development of students' knowledge over time. However, the importance of using AI is emphasized ethically and tactfully to ensure that it is a support tool for teachers and not a perfect alternative to human interaction in the classroom.

The use of Artificial Intelligence in education has been considered a relevant topic, although its implementation has not always been successful. Survey findings indicate that participants overwhelmingly reject the idea of replacing teachers with robots. Although AI and automation have the potential to play an important role in educational systems, there are scientific and pedagogical aspects that are difficult to replicate technologically, such as the valuable face-to-face interactions between teachers and students.

In this context, educators will need to reflect on ethical and social dilemmas associated with the use of Artificial Intelligence, such as the handling of personal data, equity, transparency, discrimination, and technological dependence. Furthermore, it is essential to address issues related to privacy and the appropriateness of AI in educational settings. These aspects

underscore the need to foster an active dialogue between educators, technology developers, policymakers, and other key stakeholders, with the goal of overcoming ethical challenges and ensuring that AI is used responsibly and beneficially for all.

In recent years, major advances in educational instruction have been needed. This technology can significantly alter the quality of future instruction, especially now that it allows for high-quality adjustments. In recent years, the success of aligned instruction has increased the need for learning, particularly since the arrival of the pandemic. Aligned courses allow you to access knowledge from the internet from all over the world. Thanks to educational instruction, the quality of these courses can be altered by adapting highly developed tools and extending instruction for students.

Online courses have taken on a fundamental role in modern education, not only as tools that expand access to knowledge, but also as invaluable sources of information for analyzing and improving educational processes. These spaces allow for the collection of data reflecting student behavior, interaction, and achievement, creating opportunities to develop new teaching strategies. (Giró y Sancho, 2022).

Specialized organizations have leveraged technologies such as deep learning and natural language processing to analyze this data in detail. This has made it possible to design educational methods tailored to the needs and characteristics of students, thus optimizing their learning experience. A prominent example is Solar's work in 2022, which used these tools to personalize educational techniques based on student engagement and outcomes, marking a significant advance in this field (Barrios et al., 2021). By providing more targeted and effective solutions, online courses not only respond to current demands for personalization but also open the door to research that redefines traditional educational models. This approach drives more inclusive and efficient teaching, adapted to the challenges and possibilities of the digital age.

With the support of artificial intelligence, it is possible to design advanced simulators that accurately replicate real-life scenarios. This type of technology is extremely useful in fields such as medicine, aviation, combat, and the development of new projects. Advances in this area offer the opportunity to improve education by analyzing data and allowing students to identify

the most common errors, adapting lessons in real time based on identified needs. Student feedback is also critical in this process.

It is equally essential to deepen our understanding of cognitive learning, which leads to the development of more advanced educational tools supported by more comprehensive data collection. Furthermore, one of the great strengths of artificial intelligence lies in its ability to process vast amounts of information in real time, identifying key patterns that can optimize procedures and improve efficiency, as Santaella (2021) points out.

In the current context of increased availability of large amounts of data (big data) that currently dominates the market with large technology companies (Amazon, Google, Facebook, YouTube, Spotify, Netflix, etc.), the Transmedia platform - Multiplication, Intelligence and the spread of applications with intelligence.

This change undoubtedly brings positive aspects and challenges, but what truly stands out are the benefits of technological advances. Platforms like Scopus play an important role in the university sector. Researchers can immerse themselves in cutting-edge fields and solve problems affecting academic communities and social sectors in need of protection. Diving into numerous related resources enriches their research, provides a more relevant approach, and provides valuable data tailored to the reality they are investigating.

Previously unknown problems are now accessible. At this point, artificial intelligence emerges as an important support tool for researchers. AI allows researchers to focus on topics of genuine interest and effective influence on social progress, particularly in the field of education. By using AI as an ally, the door opens for more effective and relevant examinations, ultimately contributing to education and progress throughout society. As you can see, additional tools are available to students. This promotes the synergistic effect of human skills and artificial intelligence. This leads to the use of technology that innovates the training process at universities.

Intelligent educational systems rely on a variety of artificial intelligence technologies. The most widely used areas of education include: adaptation techniques based on student and group models, intelligent agents, Webcentology , and semantic techniques.

In higher education, the latest technical updates are constantly being kept up-to-date, and one of the most well-known innovations is the implementation of intelligent AI-based educational systems. Applications based on the use of AI models allow for the use of group models, while real-world results are achieved by checking sources with plagiarism-recognizing software. These systems offer the potential to guide students in improving their writing, promote personal autonomy, and undermine students' own knowledge.

On the other hand, the machine does all the work, serves as a valuable research aid, and helps generate ideas for further research. The goal is to increase the quality and innovation of research, allowing students to adapt to qualified concepts. The essential point is that artificial intelligence will not replace students, but rather advance them.

It understands the issues and the rights of others, and it will become an ally in advancing the research process and promoting the creation and improvement of knowledge for the benefit of academia and society. AI helps reduce errors and improve the accuracy of data analysis when generating test results. Therefore, Vera (2023) points out that AI frees up time and resources, allowing teachers to focus on creative educational activities and greater added value. For example, automated testing and data management can speed up the assessment and feedback process, allowing teachers to spend more time interacting with students, providing important feedback, and providing additional support.

In university training, assessment activities carried out must be aimed at acquiring learning. This is because we must have an effective strategy, without forgetting that knowledge acquisition must be accompanied by efficiency, known for measuring knowledge of performance and knowledge of performance demonstrated in the environment. This assessment allows more time to assess their knowledge and generate better planning lessons. Therefore, this support will ensure that students receive everything they need. This provides the advantage of promoting learning for the teacher.

AI supports assessment and lesson planning for learning to ensure support in higher education. Sánchez and Lama (2007) present many solutions for the delivery needs of the education sector, where the field of artificial intelligence can provide intelligent tutors, automated assessment systems, report-based learning training, and types of learning and teaching.

All academic tasks require additional help at some point. In this context, apps play an important role, recognizing that not all students acquire knowledge the same way. The selection of tools depends on the student and the nature of the study. In some cases, students may benefit from intelligent tutoring systems which offer personalized guidance and support. On the other hand, automated grading systems working as valuable tools for assessing students' understanding of specific subjects. Furthermore, computer-assisted collaborative learning approaches promote group work. They allow students to strengthen their skills through mutual cooperation and generate new knowledge from collaborative experiences. After all, learning through games relies on different effective strategies, especially for certain students and children. This game will motivate young students and help them learn through interesting participatory experiences. In short, this tool should meet the needs of each student and pay attention to their special characteristics.

Considerations that need to be taken into account regarding the challenges posed by the use of AI and its existing limitations include those expressed by VERA (2023). It explains that the integration of AI into university training is about access and fairness. AI can democratize access to education, as it offers many students the opportunity to learn online, but there is a risk that only those with the right technology and resources will fully benefit from it. This increases the educational gap between students, socioeconomic levels, and technical skills in various regions.

It's clear that AI poses the challenge of leaving many people far removed from this technology. However, a small but passionate group of people seeks to deepen their knowledge and involvement in this field. In the practical educational sector of paper technology, there are still obstacles that hinder full progress in AI implementation. The main obstacle is the need to create an ethical code to guide the use of these tools. Furthermore, there is a lack of consequences for those who engage in poor practices with AI.

To promote this, it is important for people to maintain the use of AI and establish clear regulations and ethical standards that recognize the foundation for responsible and effective use. In short, teachers need modern training in technological use. This exceeds the overall gap in compliance with these changes. AI can achieve positive results through proper preparation only when all the necessary steps for development have been taken.

In short, it is important to address these challenges to fully exploit the potential of AI in university composition. All of the above limitations mean that the teaching gap is widening not only among teachers but also among students themselves. Students are crying out for changes in training, but in many cases, they cannot find an adequate response to their needs. To address this problem, it is important to effectively transform dynamic and socially engaged classes. We also need to rethink our assessment methods to ensure an effective and substantive record of learning.

These are the first steps toward addressing these challenges. Furthermore, guidelines must be established to ensure that internet access is guaranteed throughout the educational community. This eliminates excuses related to a lack of connectivity. It is also important to resolve issues related to power and planning for synchronous and asynchronous support. The latter is a pivotal moment in which everyone can ask clear and accessible questions and concerns. In short, overcoming these limitations requires a significant focus on educational methods and guidelines for technical training and education, supporting equal educational opportunities.

In today's educational landscape, significant challenges range from complex concepts and inadequate instruction to a lack of effective teaching resources and assessment systems. Traditional teaching methods, while useful in certain contexts, fail to adapt to the unique needs of each student, which can result in substandard academic performance. (Diaz et al., 2021).

Artificial intelligence is positioning itself as an effective alternative for addressing current challenges in education. Tools such as machine learning have the ability to process vast amounts of information, facilitating the identification of trends and specific requirements. This enables the design of tailored strategies that enrich and optimize the learning process, offering an academic experience better suited to each student's individual needs. Natural language processing, meanwhile, facilitates interaction with automated learning platforms, providing direct support tailored to each student's level of understanding. Finally, mathematical visualization offers innovative ways to present complex concepts, helping students understand them more clearly and practically (Bates et al., 2020).

The potential of artificial intelligence to transform educational methods is immense, especially through innovative tools that significantly enhance the learning experience. Interactive simulations are a key example of this innovation, as they offer students the opportunity to explore complex concepts in a hands-on way, thereby achieving a clearer and more applicable understanding. In addition to making learning more visual, these simulations foster a higher level of interest and active participation among students, strengthening their commitment to the educational process (Barrios et al., 2021).

Furthermore, the personalization of educational content is another key benefit. AI-based systems can adapt to each student's skill level, learning style, and pace. This allows for a more individualized approach, where each student progresses according to their specific needs, promoting more efficient and satisfying learning. (Freitas et al., 2021).

In terms of assessment, automated learning algorithms represent a major advancement. They analyze factors such as response times, question complexity, and error frequency to provide a more accurate assessment of student knowledge. This not only identifies strengths and areas for improvement, but also guides teachers in adjusting teaching strategies more effectively (Giró y Sancho, 2022).

Artificial intelligence has the potential to ensure that every student receives the resources and support necessary to excel in areas such as mathematics by developing personalized educational materials with high-quality standards. Although this technology represents a promising tool for addressing problems in the education sector and offering solutions tailored to students' individual needs, it still faces several challenges. Among these challenges is access to information, as artificial intelligence requires a comprehensive and well-structured database to enhance its learning capacity and maximize its effectiveness in improving educational outcomes

Gathering sufficient data to train artificial intelligence represents a significant challenge in education. A common limitation of this technology is the lack of transparency in the generation of its conclusions, which hinders students' ability to comprehend and trust the results provided. Furthermore, both educators and students may be reluctant to change, which can hinder the introduction of technological innovations and hinder the adoption of AI in educational contexts. Despite these challenges, artificial intelligence has the potential to adapt

to the specific needs of each student, significantly contributing to improving their academic performance.

Thus, we see that AI can transform education by utilizing all students—all students who are masters of their work—with more personalized, effective, and accessible training. However, we must not forget that the use of applications like Chat-GPT poses potential educational risks.

Similarly, this technology can reduce students' reliability as an assistant in their homework, and problem-solving, and influence the development of critical thinking. This is especially important, in addition to the problem. Plagiarism is another major problem related to this type of technology, and perhaps one of the most influential.

DISCUSSION

When including results, discussions about the significance of the instrument compared to other studies and procedures used should be included. Artificial intelligence (AI) represents the complex field of open-source tools that aim to program and examine automated learning networks of neurons based on algorithms that view machines as similar to human thinking. As Rouhiainen (2018) emphasizes, it relates to the capabilities of machines, algorithms, data knowledge, and the use of this learning in the same way as individuals.

After the reviews, information on the use of AI, and the results, these aspects were considered and contrasted in the learning process developed by the teacher. As explained today, information and communication technology (ICT) training was influenced, and these new technologies have revolutionized the acquisition of species and knowledge, with many options and adaptability that have revolutionized the needs of each individual (Mendoza, 2018).

Another finding indicates that Artificial Intelligence can enhance the educational experience for students by providing instant feedback, modifying content, and promoting access to tailored resources. Furthermore, the tool can assist educators in analyzing new teaching and learning methodologies to ensure data equity, access, and safeguarding. "As highlighted by various authors, the significance and context of artificial intelligence usage—particularly the country—must be considered to effectively adapt to each student's individual needs and personalize both the learning process and educational resources" (Vera, 2023).

Furthermore, Ramírez (2023) emphasizes that AI-based personalization allows for adapting the pace, difficulty, and approaches of educational content to suit students' abilities and preferences. In this context, along with the results, it is recognized how the use of artificial intelligence is created in the field of university training and how to learn how to use creative educational strategies that promote positive and meaningful learning.

According to Prieto et al. (2008), students don't remember everything they learn, but they do remember things they believe will help them with their current and future needs. Therefore, it is important to design a learning experience that is relevant and applicable in the real world. And what are the impacts on the education process? Various theoretical perspectives and empirical evidence in this field must be considered to achieve this goal. Another parameter

reflects the adoption of AI in university training. This provides significant advantages for promoting intelligent computer programs, processing data through commands, and receiving necessary information quickly and promptly.

According to Burgos (2019), the implementation of artificial intelligence can strengthen the coordination of the learning process by recognizing individual student strengths and tailoring instruction to their unique learning needs and styles, ultimately optimizing educational outcomes. Meanwhile, there have been negative concerns about the use of AI, particularly regarding interpersonal interactions and specific student preparation. It is also unclear whether they believe it is trying to mimic human brain processes such as debate, vigilance, language, and emotions.

According to Pucha (2023), Artificial Intelligence can replace the interaction between teachers and students. This could adversely affect the quality of learning, especially the development of socio-emotional skills. This raises crucial questions about preparing students for their personal and social growth, not for their academic content. Finally, it is key to consider the challenges of Artificial Intelligence, ensure ethical use of the tools, safeguard the privacy of student information, and foster a fair and transparent relationship with the technology. To ensure equitable and equitable education, it is necessary to examine the ethical impact of implementing AI in university education.

According to Vázquez (2023), professionals and researchers in educational technology recognize that artificial intelligence (AI) integration in university education is a topic of ongoing debate. Some support its implementation as a means to improve educational quality, whereas others stress the need to safeguard interpersonal interaction, ethical values, and the holistic development of students. AI has traditionally been associated with computers. Reviews of various articles, particularly in the context of the education sector, clearly show that computers form the basis for the development of artificial intelligence, but they have formed a gravity that moves only as computer artificial intelligence, hardware, software, or equipment (Marcial & Gomes, 2022).

According to Rouhiainen (2018), several authors have identified AI as a computer-based exploration industry, whose activities aim to uncover a range of cognitive challenges often associated with human intelligence. Meanwhile, certain forms of intelligence—particularly

those involving the ability to perform tasks requiring human cognition, such as eye tracking, speech recognition, decision-making, and reading—still rely heavily on human intelligence. Grammatical theories, as Haugeland (2001) explains, guide the development and adaptation of computer systems to align with human cognitive potential. Artificial intelligence, from an academic, scientific, technical, and practical perspective, is defined as the ability to develop machines with specific intelligence, as described by García in 2012. This concept encompasses fundamental principles and characteristics that allow machines to demonstrate levels of intelligence comparable to human abilities. These capabilities include solving complex problems, learning autonomously, processing data from diverse sources, and performing tasks that traditionally require advanced cognitive skills (Giró y Sancho, 2022).

These characteristics not only underscore the multidimensional nature of artificial intelligence but also highlight its potential to play a key role in transforming multiple areas, from education to industry. The ability of machines to perform a wide range of human-like functions reinforces their importance in creating innovative and efficient solutions (Barrios et al., 2021).

Artificial intelligence and machine learning are often considered for use on mobile devices. However, this requires complex arithmetic training and learning (Vega et al., 2020). Several platforms have been proposed to achieve this goal. This is especially important for mobile devices (Yáñez, 2017). This API offers significant value for mobile devices by reducing latency and complexity within the network.

Artificial intelligence applications on mobile devices, such as Squeezenet , Mobilenet , and Shufflenet (Pérez, 2022), have generated significant advances in the field of education. These technologies allow students to be supported immediately, facilitating interactive learning adapted to their needs. According to Giró and Sancho (2022), this development elevates mobile training to new levels, integrating functionalities that optimize both time and the learning experience.

Virtual reality stands out as another tool that radically transforms educational methods. By connecting students to virtual classrooms, it allows them to transcend physical limitations and promote the creation of global learning spaces. This innovation opens up opportunities to explore concepts immersively, collaborating with students and educators from around the world (Freitas et al., 2021).

chatbots, on the other hand, offer personalized interaction through virtual coaches, optimizing online communication. These tools not only facilitate learning but also analyze students' level of understanding, helping to identify areas for improvement and personalize educational resources based on their needs (Sanabria et al., 2023).

Meanwhile, machine learning, data mining, knowledge recommendations, understanding, and acquisition based on knowledge models are related to other methods for analyzing learning. Educational AI systems generally consist of two parts: lessons, data, and intelligent algorithms. This can be further divided into two parts: system models (which include students, education, and knowledge models) and intelligent technology. This model serves as the core of AI systems with the technology that powers them (Hauugland , 2001).

The knowledge model creates a mapping structure of the knowledge structure that contains detailed learning content. This typically includes experience and rules for the errors students often make. The education model combines knowledge with students' field models to determine rules for accessing knowledge fields. This allows teachers to adapt their instructional strategies and behaviors (Galipiense et al., 2003).

During the educational process, students can take proactive actions, implement actions, and request support. AI systems are always ready to support pedagogical theories embedded in personalized tutoring models. The user interface displays student performance in various input areas (language, writing, clicks) and delivers outputs (text, numbers, comics, agents). The expanded user interface offers AI-linked features such as natural language interaction, speech recognition, and identification of student emotions (Rouhiainen , 2018).

The relationship between education and technologies such as machine learning, learning analytics, and data mining has evolved significantly, enabling advances in both understanding and improving educational processes. According to Díaz (2021), these technologies have led to the formation of two main communities: one focused on mining learning analytics and the other on educational data management. Despite their distinct approaches, both share goals and methods that combine the strengths of diverse fields, such as statistical psychometrics, data modeling, and data mining.

Learning analytics primarily focuses on optimizing content and learning management systems, especially in the context of critical large-scale testing. This enables the development of more effective strategies for assessing and personalizing education. On the other hand, data mining, derived from intelligent systems, seeks to extract meaningful information that improves decision-making in the educational field. However, it still faces challenges in terms of widespread awareness and understanding, which limits its large-scale implementation. (Vera, 2023).

The core of machine learning is an analytical process based on past test data, training data, and knowledge discovery that generates important patterns and structured insights. Through machine learning, students can make recommendations, such as choosing a class or university. Use data on student services, group efforts, and institution preferences to develop better. Additionally, this technology helps students understand how well they cover concepts, adapt teaching methods, and better understand course materials (Sandoval, 2018).

These general techniques include decision learning, guided logic programming, clustering, enhanced power, and Bayesian networks. From a technological perspective, deep learning increasingly emphasizes expressions as successive layer learning. These properties are extracted by a model called stacked neural networks, layered with literals stacked with other layers (Díaz, 2021).

One practical application of AI-based student learning analytics is skills training. This enables important data with predictive capabilities. This leads educational institutions to take action. In addition to a competitive foundation, Learning Analytics also utilizes a variety of AI capabilities. Regarding the decommissioning problem, AI can consider various parameters to classify students with the potential for failure and generate the system's initial alarm system and measurable data (Camino, Urbina, Barbosa, 2020).

Learning analytics faces a key challenge: expanding its scope to encompass broader areas such as interpersonal skills, arts, and literature. This entails overcoming the limitations of the traditional use of this tool, which has so far focused primarily on specific contexts, and transforming it into an adaptable methodology that can be applied simultaneously to diverse courses and institutional settings.(Sanabria et al., 2023)

This more general approach would allow educational institutions to effectively integrate learning analytics across multiple disciplines, fostering a more balanced impact on students' academic, social, and creative skills. Furthermore, by employing augmented technologies, the possibilities for personalization and real-time interaction are expanded, improving both the learning experience and the outcomes achieved (Breines y Gallagher, 2023).

The usefulness of learning analytics extends beyond students to coaches, administrators, and institutions as well. By providing accurate and actionable data, it facilitates decision-making and the design of educational strategies tailored to different needs. In this way, it contributes to the creation of a more dynamic educational system, prepared to face the challenges of the future (Barrios et al., 2021).

Educational data mining aims to generate systematic, automated responses that help students develop and meet their individual needs (Ballesteros et al., 2013). For example, it can analyze student and grading data for small amounts of written assignments. Machine learning regression methods can be implemented to predict future student performance (Contreras, Fuentes, & Rodríguez, 2020).

Data mining is a powerful resource for optimizing the learning process and knowledge sharing, leading to a better understanding of the educational environment and students. In short, data mining can be interpreted as a model-to-predictor identification, the goal of which is to maintain pervasive knowledge. In other words, teachers have the ability to collaborate to optimize curricular advancements in the educational system (Giró and Sancho, 2022).

One of the most important applications is that data mining-based AI allows students to personalize their learning based on data from the field of knowledge that determines their learning and how they learn. By using personalized learning, students are ideally engaged, and teachers decide which courses and teaching methods will be tailored (Arana, 2021). Data mining allows for more accurate intelligence creation, and the results are more reliable.

An analysis of the selected articles confirms that artificial intelligence has had a significant impact on education, contributing comprehensively to the transformation of multiple sectors. In the administrative area, AI has automated repetitive tasks, optimizing resource

management and enabling greater efficiency in institutions. This automation frees up time and effort that can be redirected toward strategic activities and student support (Diaz et al., 2021).

In instruction, artificial intelligence has demonstrated its ability to design and develop adaptive curricula tailored to the specific needs of different groups of students. Similarly, in learning, AI-based systems are facilitating more personalized experiences, promoting interactive learning that responds to each student's individual styles and pace. These technologies not only improve educational quality but also promote a more inclusive and equitable approach (Sambola, 2023).

The reviewed research (Padilla, 2019; Ocaña, Valenzuela & Garro, 2019; Jara & Ochoa, 2020; González & Bonilla, 2022) emphasizes how AI is positioned as a catalyst for innovation within educational institutions. Its implementation allows for addressing traditional problems while redefining both pedagogical methods and administrative processes, marking a paradigm shift in the way education is taught and managed.

Artificial intelligence has proven to be an effective tool for optimizing administrative management within the educational field. Furthermore, its implementation has spread to diverse areas, such as curriculum design, educational content creation, and guidance in the use of innovative technologies, including virtual reality, online platforms, robotics, video conferencing, audiovisual storage, and three-dimensional technology. These applications not only increase the efficiency and effectiveness of teachers in their work but also offer students a more enriching learning process tailored to their particular needs, as highlighted by Jara and Ochoa (2020).

Online learning or using a web-based learning platform means access to materials from around the world and the use of other aspects of AI, including: B. A voice translation tool that helps improve student learning.

The integration of artificial intelligence into education has transformed key aspects, such as curriculum assessment and sharing, the adaptation of teaching and learning methods, and teacher-student interaction. AI-based platforms and applications demonstrate how these technologies can have a positive impact at different educational levels (Haan, 2023).

Notable tools include intelligent tutoring systems such as Active Math, Mathia, Why2Atlas, Comet, and Viper, as highlighted by Ram and Tyagi (2020). These systems are designed to offer personalized support to students, allowing them to progress at their own pace and needs, while teachers gain useful information to adjust their teaching strategies. By focusing on specific areas such as mathematics, these platforms optimize the learning experience by combining theory with interactive and adaptive practices.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) also notes that AI is permeating various sectors of the business world, particularly the education sector (PITA, 2021). Changes in education imply changes in the world of work and employment. This requires the inclusion of AI in its classes and learning. In this regard, there is intensive use of AI in the medical profession, and students must be exposed to the use of technology in medical training to prepare them for real-world experiences (Vidal et al., 2019; Joison et al., 2021).

Web-based smart education has become an important part of education, and has become even more so due to the expansion of online training based on the inclusion of AI options and the performance of the platform as an educational device for use (Rodríguez, 2021). This means taking into account a variety of factors, including student knowledge and ability, learning, performance, and compatibility. It is used to develop and use platforms that enhance lessons and learning experiences.

Research and understanding by some social agents, teachers, and students ensure the development and use of adaptive systems in education, particularly in globally accessible websites (Rodríguez, 2021).

IAS can promote better access to learning by addressing barriers to learning automation, academic functions of management and institutional management, education and learning optimization, and optimizing empirically based decisions and initiatives. As a virtual platform, it can create a better professional environment for teachers and students. It can be used as an assessment tool for exams and grading, freeing up teacher time. It also helps students navigate different content pathways and tailor their learning to their own strengths and weaknesses.

One of the most significant areas of education impacted by AI is the performance of various administrative tasks, including reviewing work, grading, and providing student feedback. AI has

improved the efficiency of institutions and administrative services, particularly distance and online services (Russo et al., 2022).

The Smart Tutor System (STS) performs a wide range of functions, including approving and providing feedback to students. Thus, teachers provide guidance and instructions that increase the efficiency of various administrative tasks and their primary assignments and help students excel in their research (Rodríguez, 2021). This is exemplified by programs such as Gymnastics and Ecree . It is necessary to recognize suggestive notes among students and check for plagiarism (ARCE, 2023).

The evidence base ensured an optimal collection of student materials and preserved or optimized learning through empirical evidence, including the integrated use of cognitive and learning models (Rodríguez, 2021). Indeed, through manufacturing and, of course, adaptation, the program facilitated students' abilities and needs, enhanced learning experiences, and facilitated the achievement of established goals.

Furthermore, these systems encourage deep learning by involving discussions behind their positions, inspiring students to watch and adequately explain the discussions behind their positions until they improve their records and information storage (Díaz, 2021).

The goal of artificial intelligence is to support the development and implementation of educational systems, serving as a powerful means to improve educational quality. Simulation-based learning, which integrates technologies such as virtual reality, exemplifies how these tools can effectively present content to students" (Acevedo et al., 2022). Applications of the same or similar concepts to the same elements of education in education or the same elements of 3D technology have been accepted as teaching tools for meaningful teaching and learning (Padilla, 2019). Similarly, the use of AI in the form of virtual reality and simulation in medical training is emphasized. In other words, students use practical aspects of education such as:

The integration of artificial intelligence in the form of machines and robots has proven to be a key innovation in the field of education. Studies such as those by Constant et al. (2019) highlight the use of collaborative robots, known as " cobots ," which function as assistants for teachers and colleagues. These tools are capable of performing tasks such as teaching basic

activities and improving word pronunciation, providing significant support in the learning process.

Furthermore, Martínez (2021) highlights how artificial intelligence, applied to computer programs and interactive robots, enables the implementation of chatbots capable of handling daily queries and, in some cases, distributing educational materials. This approach not only automates certain tasks but also promotes more dynamic interaction with students. The versatility of AI-based systems is not limited to their cognitive and decision-making abilities. They also incorporate interaction and conversation capabilities that make them complete educational tools, capable of adapting to different needs and contexts. By integrating these technologies, more interactive and tailored learning is fostered, improving the experience for both students and teachers.

Several platforms and applications were found in the analyzed article. This makes it easier to adapt and tailor content that enables information and memory and improves the student learning experience. As the technology has demonstrated, previous Wuston applications have created real-world recommendations for students based on learning styles, automated learning algorithms, and adopted course materials or content (Huguet, Durado, & Salts , 2021) depending on the student's needs. Other platforms with similar capabilities can enhance student learning experiences at all levels of the education system, from early childhood education through undergraduate and graduate levels (Merino, 2021).

Artificial intelligence systems have significantly transformed access to and personalization of learning. In the past, students relied exclusively on their coaches or tutors, which meant restricted schedules and waiting times for feedback, limiting the ability to answer questions or reinforce concepts in a timely manner. (Sanabria et al., 2023).

Today, intelligent tutoring systems, such as Carnegie Learning , have revolutionized this process by providing individualized lessons tailored to the difficulty level of the material and the specific needs of each student. These systems not only offer tailored content but also include immediate feedback mechanisms, allowing students to progress more independently and effectively. The ability to interact directly with the tool optimizes the learning process by providing constant and accessible support (Barrios et al., 2021).

The constant advancement of artificial intelligence has allowed it to act as a comprehensive assistant, adjusting to different learning styles to offer support to both students and their mentors. In the future, this technology will explore strategies that stimulate students' creativity and imaginative thinking, in addition to optimizing their learning methods and fostering their emotional well-being. It will also seek to foster subjective skills and develop personal competencies.

Rather than simply facilitating the understanding of specific topics, AI systems will be able to incorporate specific knowledge and detail key skills, such as learning management, knowledge management, professional development, and personal competencies. This will strengthen both students' technical and emotional capabilities, marking a significant advance in education.

Analyzing the various texts provided, we can recognize the general consensus regarding the important role of AI in education, which can revolutionize traditional paradigms. Furthermore, AI-based programs are being used to augment planning and digital skills development for training professionals (Pegalajar et al., 2023).

The opportunities that AI offers to enhance learning and teaching are recognized, but significant challenges have also been proposed. The connection between technology and teachers is crucial, as it underscores that AI cannot fully replace the role of teachers. The need to balance the use of technology with a human approach and to promote ethics and access to technology is considered relevant (Crovetto, 2020; Flores et al., 2022; Language et al., 2020).

Similarly, educational institutions provide the importance of teachers who adapt to new technologies and teaching methods (Macíaset Al., 2023; Rodríguezetal ., 2019; Rodríguezetal ., 2023) while providing adequate support and training.

From healthcare applications to legal education, trust must be built in computing technology and deep learning that ensure the accuracy of diagnosis, models, and methods that assist students (Albuja and Guadalupe, 2022; de la Cruz et al., 2018; García et al ., 2023; Joison et al., 2021; Rodríguez, 2018; promising results are exhibited).

The personalization of learning with AI is one of the most well-known aspects, allowing content and activities to be tailored to individual students' needs (González, 2023; Díaz et al., 2021). Important needs for the ethical use of data collected by artificial intelligence are highlighted, ensuring adequate protection and privacy. Meanwhile, the current lack of information on this new phenomenon is prominent, and the relevance of the discipline in the field of education is carefully considered (Macías et al., 2023).

Future learning and training systems must ensure that individuals acquire basic AI skills and come equipped with data protection skills. Educational personnel must anticipate these changes and communicate the skills needed to adapt to an AI-dominated world without affecting the sustainability of society.

Educational institutions must empower individuals to provide advance planning, introduce new technologies, create teaching communities, and promote innovative use of AI equipment (de la Cueva et al., 2022; Morales et al., 2023; UNESCO, 2021).

Providing adequate training to teachers is an essential step to ensure successful implementation of artificial intelligence in education. This approach addresses challenges related to technology acceptance and strengthens the pedagogical skills necessary for its effective use. Training not only improves teachers' interaction with these tools but also drives educational transformation toward more innovative and effective models (Breines y Gallagher, 2023).

A key challenge lies in balancing the integration of technology with pedagogical practices, alongside addressing ethical issues associated with data collection and management. Despite these challenges, the potential of artificial intelligence to significantly improve the quality of learning and redefine pedagogical approaches in the 21st century is undeniable. As Cargua et al. (2019) point out, properly integrating AI has the power to transform education and prepare new generations for a more dynamic and technologically advanced future.

CONCLUSIONS AND RECOMMENDATIONS

Over the past five years, artificial intelligence has experienced accelerated development, transcending its exclusive application in academia and expanding into multiple disciplines. This progress has had tangible effects on various aspects of society and culture. Factors such as improved algorithms, increased computing power, and access to an unprecedented volume of data have been decisive in the evolution of AI. These advances have enabled significant achievements in specialized fields, marking a new era of technological innovation.

Deep learning and machine learning have revolutionized the capabilities of artificial intelligence, reaching exceptional levels in the execution of complex tasks and in the creation of highly advanced systems and robots. This progress has positioned the technology as a key economic driver, prompting numerous companies to invest in the research and development of innovative projects. This constant cycle of advancements fosters new opportunities but also poses challenges by pushing the limits of what artificial intelligence can achieve.

However, there is still a long way to go to create a machine with human cognitive abilities, and the ultimate goal is still decades away. The learning capabilities of these new systems will impact the global economy, along with critical applications, particularly in areas such as healthcare, finance, and transportation. It is clear that success in this field will lead to a society where the impact of AI is more profound.

Access to this technology is increasing, as are the economic benefits. Therefore, these economic benefits, competitive pressure, and optimism have shifted in the coming years, as many companies are rushing to integrate AI algorithms. We are at a turning point, as we will develop in the coming years. Building trust in society is the ability to advance and will likely shape the future of science. Therefore, it is important to reflect on the risks and drawbacks of using AI to ensure successful and safe development. In other words, there is a hidden risk beneath the optimism.

Discrimination, distortion, data protection violations, and deep holes are just some of the challenges facing this new technology. This new scenario is not enough for developers, scientists, and researchers choosing a new future. However, it is clear that a broad discussion must be created that includes all areas of human research. This field is possible, but it is

important to lay the groundwork for the proper development of AI that can minimize negative risks to society.

This requires technical solutions to produce a robust, reliable, and transparent system with systems that facilitate error detection and provide algorithms with greater security and control. It also requires developing tools that can understand the rationale for all decisions and address the trust, integrity, and fairness of how the system operates. Looking ahead, many measures are extremely important.

The role of government during this period is essential. Most people already recognize the importance of this new technology and are taking the first step to develop a corporate regulatory framework. Around the world, the main priorities based on various government agencies revolve around developing measures to avoid potential undesirable and negative consequences. The European Union already intends to create a robust regulatory framework that will enable the safe development of AI in Europe, while simultaneously promoting investment in the sector, leading to the publication of the terms and recommendations of the ethical framework for regulatory proposals expected in 2022.

However, the regulatory challenges are complex, as state agencies still remain, and much research and investment fails to keep pace with technological advancement. No one knows what the future of artificial intelligence will bring, but it is clear that we must do everything possible to allow AI to flourish and improve the quality of life in society. Targeting both benefits should be everyone's primary goal. A symbiosis helps us manage these challenges, something we cannot achieve by learning how to obtain the best machine and combining it with the best humans.

Finally, keep in mind that AI has the potential to create evolutions we've never seen before. It's important to know that there are potential challenges. However, careful planning and ethical implementation create a culture that can engage more students and improve the structure of society, and requires long-term updates.

Horizontal education at KI University appears as a beacon illuminating forms of innovation, excellence, and justice. In this article, we have examined several aspects arising from the use of AI. This has led to changes in curricula and courses to the automation of research, data

analysis, and educational processing. It has arguably led to global changes in education, including the enrichment of student and teacher experiences, the adaptation of pedagogy, and the personalization of learning.

Human-machine collaboration demonstrates the automation of research, allowing it to share boring tasks and focus on creativity and in-depth analysis. Therefore, data analysis has become a great beacon of knowledge that guides the optimization of decision-making and well-discovered educational strategies. AI techniques in university organizations have opened the door to adapting and scaling content, but the effectiveness and efficiency of assessments through student measurement and the redefinition of learning encourages and invites improvement.

Furthermore, AI-based educational therapy has guided education beyond traditional paths to provide meaningful learning opportunities. Once these tools are utilized, the collective benefits of AI will be realized. How can this technology be demolished, gaps addressed, and integrated training fostered and accessible to all? However, the challenges and limitations of AI cannot be ignored in the training provided by universities. This is a form of change, and while the change that society demands and yearns for is no exception to ethical and technical obstacles, there are experts who emphasize the current obligation to build a better society based on ethics and transparency with AI.

In this context, we can see that the AI thesis of the training provided by the University is a constant work of construction carried out by all employees of this type of technology. As all teachers and all students can demonstrate the full potential and enhance the development of traditional technology throughout society, urgent obstacles can enhance education in new ways, as it can be applied to wisdom and ethics, as it helps find solutions and communicate with AI. It is important to consider that the current generation is ultimately an agent of this change, as the educational landscape is overgrown with artificial intelligence.

In short, the promise of AI-enhanced university education is exciting, but there is also a responsibility to ensure fairness, inclusion, transparency, and ethics at every step. In short, the AI available in universities leads to a journey toward innovation and change. If this path is navigated with respect, awareness, and a vision for change, university education can reach its full potential, building a generational future with knowledge and determination about

sustainable ethics, creating collaborative practice, critical learning, and the most promising social structures.

As learning content meets the individual needs and abilities of each student, learning coordination is one of the best areas for educational research. Automatic assessment is also a valuable technique that can save time and improve the objectivity of reviews. AI is also used for intelligent individualized instruction. This tutor uses intelligent virtual agents to model students and provide feedback and support. Additionally, AI is used for early detection of learning problems, helping to identify and address issues before they become significant obstacles to learning.

As a trend in AI, we analyze deep learning and generative artificial intelligence and their application in the field of education. Deep learning is used to recognize language and text, identify learning patterns, and support and recognize plagiarism. Generic artificial intelligence, on the other hand, focuses on creating systems that can be used to generate new content, such as images, music, text, and other types of data. In the field of education, there are several applications for artificial intelligence, such as: Both branches of artificial intelligence are extremely useful for improving and adapting learning.

Artificial Intelligence has become a useful resource for enhancing teaching and learning. The examples of projects and work cited in the article demonstrate how Artificial Intelligence can be used to personalize each student's educational experience, tailoring content and tasks to their learning needs, and providing tailored feedback.

Furthermore, AI can be used to create educational games and interactive visualizations that help students better understand abstract concepts. The bottom line is that AI can dramatically improve education by providing new forms of personalized instruction and immediate feedback to all students. However, a lack of appropriate data, resistance to change, and a lack of interpretability are some of the challenges that must be addressed for effective educational implementation.

Furthermore, AI also has the potential to make learning more accessible for all students, including students with disabilities and students who lack access to high-quality educational resources. Similarly, the main risks associated with the use of AI in education have been analyzed, and some of the problems it creates are current challenges that create challenges not only at the technical level but for the entire education system. We will continue to see how these technologies inappropriately transform our teaching and learning. If the challenge is addressed appropriately and the opportunities are utilized, AI can revolutionize the ways we teach and learn. After all, it is important to emphasize that AI is not a replacement for human educators, but could be a useful tool to complement the educational process and enhance student learning.

In summary, a thorough review of the text highlights a widespread consensus about the substantial value it contributes to the field of education, which could change the traditional paradigm. AI's ability to optimize the educational process and adapt learning to meet individual students' needs is considered an important development.

Artificial intelligence has shown great potential to transform teaching and learning, but it is not without critical challenges that must be carefully addressed. One of the most significant aspects is the interaction between technology and educators, as AI, although powerful, cannot replace the essential role of professionals in education. Teachers bring human skills such as empathy, contextual judgment, and inspiration, which are fundamental to the educational process. (Barrios et al., 2021).

Finding a balance between technology adoption and human interaction is essential to ensure that AI becomes a complement, not a replacement. This balance must be accompanied by a commitment to ethics, especially regarding the use of students' personal data and fair access to these tools. Trust in AI systems and the development of deep learning models are key pillars

for their effective implementation, particularly in fields such as medical science, where accuracy and reliability are crucial.

Furthermore, with promising results, personalizing the learning process with AI allows for the adaptation of content and teaching methods to meet the unique needs of each student. However, this approach is counterbalanced by the urgent need to improve ethical considerations in the recording and use of AI-generated data. AI is a powerful tool in modern education, but it has not been free of ethical challenges and issues.

How to ultimately determine the extent of the benefits, these challenges can ultimately contribute to 21st-century education. Teacher training is important for effective AI implementation in education. This way, teachers can use digital technology and AI in an educational way, focus on education, and provide personalized tutorials for their students.

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BIOGRAPHY OF THE MAIN AUTHOR/OR CO-AUTHORS.

<table>
<tr><td colspan="2">Verónica Fernanda Pérez Guevara</td><td rowspan="4"> </td></tr>
<tr><td>Filiación</td><td>Investigador Independiente</td></tr>
<tr><td>✉ Correo:</td><td>veri15p@hotmail.com</td></tr>
<tr><td>Orcid:</td><td>https://orcid.org/0009-0005-3270-5560</td></tr>
<tr><td>Cédula</td><td>1893190758</td><td></td></tr>
<tr><td colspan="3">Educadora comprometida con la excelencia académica y la transformación educativa. Licenciada en Ciencias de la Educación con mención en Inglés por la Universidad Técnica de Ambato, tiene una Maestría en Competencias Docentes Avanzadas (Universidad Camilo José Cela, Madrid) y una Maestría en Pedagogía de la Enseñanza del Inglés (Universidad Bolivariana del Ecuador). Además, es Abogada (Universidad UNIANDES) y cuenta con un Diplomado en Metodología de la Enseñanza del Inglés (Hampton College, New York). Actualmente, es docente en la Universidad de las Fuerzas Armadas del Ecuador (ESPE) y en la Universidad de Panamá, además de Vicerrectora en la Unidad Educativa Los Ilinizas. Cursa un Doctorado en Administración Educativa. Ha aportado investigaciones sobre pausas activas como estrategia pedagógica y habilidades blandas como catalizadores del pensamiento crítico. Su trayectoria destaca por su vocación y liderazgo en la enseñanza y el desarrollo educativo.</td></tr>
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<tr><td colspan="2">Javier Estuardo Amores Vera</td><td rowspan="4"> </td></tr>
<tr><td>Filiación</td><td>Investigador Independiente</td></tr>
<tr><td>✉ Correo:</td><td>javi.amores.vera@gmail.com</td></tr>
<tr><td>Orcid:</td><td>https://orcid.org/0009-0000-1548-6988</td></tr>
<tr><td>Cédula</td><td>1723008577</td><td></td></tr>
<tr><td colspan="3">Profesional en administración educativa con una amplia trayectoria en innovación curricular, aprendizaje híbrido y bilingüismo. Posee una Maestría en Liderazgo Educativo (Universidad de las Américas) y un Executive MBA (Universidad de Barcelona). Con más de ocho años de experiencia en instituciones académicas, ha liderado reformas administrativas y pedagógicas, promoviendo metodologías modernas y plataformas de aprendizaje digital. Como consultor educativo, se enfoca en mejorar la calidad educativa mediante la integración de tecnologías y estrategias innovadoras. Ha diseñado planes de estudio basados en competencias y aprendizaje basado en proyectos (PBL), promoviendo la capacitación docente y optimización de recursos. Su labor busca reducir brechas educativas y contribuir al desarrollo económico mediante una fuerza laboral mejor preparada. Su visión pedagógica se basa en una educación que fomente el respeto, la empatía, el pensamiento crítico y el trabajo colaborativo, preparando a los estudiantes para enfrentar los desafíos con responsabilidad y sensibilidad social.</td></tr>
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<tr><td colspan="2">Liseth Dayana Loza Alvarez</td><td rowspan="4"> </td></tr>
<tr><td>Filiación</td><td>Investigador Independiente</td></tr>
<tr><td>✉ Correo:</td><td>dayaloza23@gmail.com</td></tr>
<tr><td>Orcid:</td><td>https://orcid.org/0009-0006-5097-6679</td></tr>
<tr><td>Cédula</td><td>1716496532</td><td></td></tr>
<tr><td colspan="3">Profesional altamente calificada en educación y enseñanza del inglés, con una sólida trayectoria académica y científica. Licenciada en Relaciones Internacionales (Universidad San Francisco de Quito) y posee una maestría en Enseñanza del Inglés como Lengua Extranjera (Universidad UTEG) y otra en Educación, con mención en Docencia e Investigación en Educación Superior (Universidad UNEMI). Además, tiene un Diplomado en Metodología de la Enseñanza del inglés (Hampton College, Nueva York). Actualmente, es docente y coordinadora del Departamento de Inglés, liderando estrategias pedagógicas que integran tecnología avanzada para mejorar el aprendizaje. Su compromiso con la investigación se refleja en su autoría del artículo Impacto de la Integración de Tecnología Avanzada en el Aprendizaje del Inglés en Bachillerato y su colaboración en El Rol de las Habilidades Blandas en el Desarrollo del Pensamiento Crítico, contribuyendo significativamente al desarrollo académico en la educación.</td></tr>
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<tr><td colspan="2">David Jesús Andrade Delgado</td><td rowspan="4"> </td></tr>
<tr><td>Filiación</td><td>Investigador Independiente</td></tr>
<tr><td>✉ Correo:</td><td>davidjad20@gmail.com</td></tr>
<tr><td>Orcid:</td><td>https://orcid.org/0009-0000-2450-5079</td></tr>
<tr><td>Cédula</td><td>0603008061</td><td></td></tr>
<tr><td colspan="3">Teniente Coronel del Ejército del Ecuador, con más de 23 años de servicio a la Institución y a la Patria, comprometido permanentemente con la educación militar. Es Licenciado en Ciencias Militares por la Universidad de las Fuerzas Armadas ESPE, Magíster en Educación mención Pedagogía por la Universidad Tecnológica Empresarial de Guayaquil, Magíster en Defensa y Seguridad con mención en Conducción Militar por la Universidad de la Fuerzas Armadas ESPE, posee un Diplomado en Estudios de Seguridad y Defensa por la Academia Nacional de Estudios Políticos y Estratégicos de Chile. Actualmente fue designado para participar en el Programa de Instructores de Naciones Asociadas en el Instituto de Cooperación para la Seguridad del hemisferio occidental (WHINSEC) en Fort Moore Benning, Columbus, Georgia, EE.UU. Ha contribuido con investigaciones sobre las habilidades blandas como catalizadoras del pensamiento crítico.</td></tr>
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Daniel Efraín Ortiz Tabango		
Filiación	Investigador Independiente	
✉ Correo:	daniel08.oef@gmail.com	
Orcid:	https://orcid.org/0000-0003-3699-7327	
Cédula	1721036109	

Ingeniero en Biotecnología con experiencia en pedagogía y andragogía. También posee una maestría en Tecnología Internacional de los alimentos por la Universidad de Parma en Italia y la Universidad de Buenos Aires en Argentina. En los inicios de su carrera profesional se desempeñó como docente de las materias relacionadas con las Ciencias Naturales como Química, Física y Biología. Además, se ha desempeñado en el ámbito de la investigación científica que involucra Biotecnología y sostenibilidad ambiental. Ha sido docente de varias instituciones de educación media y superior. Su afición por la docencia lo ha llevado a compartir su experiencia y conocimiento en las aulas junto con jóvenes y adultos. Actualmente dirige una empresa en donde aplica sus conocimientos y conjuntamente sigue el camino de la docencia para compartir su conocimiento basado en su experiencia aplicada en la investigación y su carrera como ingeniero en Biotecnología.

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