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ARTIFICIAL INTELLIGENCE IN THE EDUCATIONAL CONTEXT

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Abstract: The use of artificial intelligence in recent years has become more and more widespread, managing to be linked to many areas of society in different ways, and the educational sector has been including more and more tools and strategies that involve the use of artificial intelligence both by teachers for teaching and by students for the realization of educational activities. The objective of the research was to analyze the implementation of artificial intelligence tools by university teachers. The study is carried out through the implementation of a descriptive quantitative methodology, by means of a survey to university teachers, which favored the recognition of the contributions of the population from their point of view and at the same time to perform an analysis of the data collected. The results showed that teachers are aware of the different AI tools, but not all participants make use of them. On the other hand, it is identified that AI can contribute significantly to the motivation of students in the classroom.

Keywords: Technology, teaching, artificial intelligence, university education.

INTRODUCTION

The extensive development of technology in recent decades has permeated social contexts in such a way that it has influenced the way of life of people in various societies. One of the aspects in which technology has influenced has been education, which has seen a significant growth in the use of Artificial Intelligence elements, which have been linked to the use of various technologies that seek to provide elements that contribute to the teaching and learning processes and provide students with elements that contribute to their development in various aspects of their lives (Flores & García, 2023).

Today, artificial intelligence (AI) has become ubiquitous, driving innovation and improving efficiency in various aspects of our lives. From virtual assistants that answer our questions to autonomous vehicles that navigate the streets, AI has radically transformed the way we interact with technology and has left an indelible mark on key sectors.

AI is revolutionizing industries such as medicine, where algorithms are used for more accurate diagnoses and personalized treatments, and the financial sector, where it optimizes data analysis and fraud detection. In business, AI-driven automation enables more agile processes and data-driven decisions, improving productivity and reducing costs. As AI continues to advance, its impact is expanding into new fields, reshaping the way we live and work, and posing both opportunities and challenges for the future.

In addition, its integration into fields such as medicine, education and finance is redefining processes, enabling more accurate diagnoses, personalization in learning and faster and more effective financial analysis. Companies are leveraging AI to automate repetitive tasks and streamline their operations, allowing them to focus on innovation. As AI continues to evolve, its impact on society not only increases, but also raises important ethical questions about privacy, autonomous decision making, and labor displacement (Moreno, 2019).

Education has also undergone significant change thanks to AI, transforming the way educational content is delivered and accessed. Online learning platforms employ advanced algorithms to personalize educational content, tailoring it to the individual needs and learning styles of students. This approach not only facilitates more effective learning by catering to each student's strengths and weaknesses, but also enhances the educational experience by recommending resources and activities that

match their interests and progress. Similarly, AI opens up new possibilities for distance education, allowing students to access a wide range of global educational resources from any location, democratizing access to knowledge and fostering a more inclusive education. This technological advancement also allows for greater flexibility in learning management, adapting to different schedules and paces, which is essential in an increasingly diverse and globalized academic world (Bajaj, 2018).

In education, artificial intelligence (AI) has been sought to contribute to the development of programs that create learning environments tailored to the specific needs of students. These programs allow for the personalization of learning, adjusting content and activities to individual skills and rhythms. On the other hand, knowledge acquisition is facilitated by providing access to a vast amount of relevant data and information, which enriches the educational process, while AI-based tools can provide real-time feedback, identify areas for improvement and suggest additional resources to support learning. This approach not only improves the efficiency and effectiveness of the educational process, but also fosters greater autonomy in students, allowing them to manage their own learning more effectively (León & Viña, 2017). As these technologies become more deeply integrated into the educational environment, new possibilities open up for pedagogical innovation and continuous improvement in teaching and learning.

Regarding the development of AI in the classroom, it is possible to find developments that facilitate the link between students and teachers, seek to contribute to the automation of administrative processes, perform diagnosis and monitoring of student competencies, and provide theoretical elements that contribute to learning. However, there is an evident need to link ethical aspects and parameters

that do not blur the contribution that can be made to educational processes; the advance of emerging technologies may be on the way to transform teaching and learning, which will lead to a disruption in education as we know it today. With this horizon, experts agree that Artificial Intelligence in education has the mission to help in the planning, personalization, visualization and facilitation of the learning process (Flores & García, 2023, p.40).

Similarly, some studies refer to the contributions of artificial intelligence in learning processes, in terms of contributions to the personalization of educational processes. AI contributes to the adjustment of content according to the needs, preferences and pace of each student, which facilitates a more individualized and enriching learning experience. Through machine learning algorithms, AI can analyze study behavior, identify learning styles, as well as strengths and weaknesses, to provide tailored feedback and recommendations. This allows students to take greater control of their own learning, thus encouraging a more autonomous and effective approach (Vera, 2023).

In view of this, it is considered necessary to address the knowledge of artificial intelligence of educational communities, in order to identify how students and teachers have advanced in the approach to these technologies and thus identify elements that contribute to the improvement of the application of these tools in the educational process. The objective of the research is to analyze the implementation of artificial intelligence tools by university teachers, being this a population called by the educational models to resort to innovative tools.

The approach to this reality allows recognizing if there have been approaches to artificial intelligence that have contributed to the teaching and learning processes, favoring

that teachers can implement according to the needs of students, the topics of each subject and students can participate more actively in the educational process and can acquire knowledge required for their development in the current social context (Ocaña & Valenzuela, 2019).

METHOD

This research was developed during the first semester of the year 2024, applying a quantitative methodology and proposing a descriptive study. This methodology was chosen in order to obtain precise and quantifiable data that would allow a detailed analysis of the phenomena studied. The choice of a descriptive study was based on the need to understand and document the current situation, providing a solid base of data and observations on the use of artificial intelligence in education.

According to Tamayo (2006), descriptive research “involves the description, recording, analysis and interpretation of the actual nature and composition or processes of phenomena... it works on factual realities” (p. 66). This approach is especially useful for analyzing how a phenomenon and its components are and how they manifest themselves.

On the other hand, descriptive research is a type of study whose main objective is to accurately describe the characteristics of a phenomenon or population without attempting to modify it. According to Hernández, Fernández and Baptista (2014), this type of research seeks to specify properties, characteristics and profiles of individuals, groups, communities or any other phenomenon that is subjected to analysis. In addition, it focuses on collecting and presenting data systematically, allowing a detailed understanding of the object of study. This approach is essential for establishing a solid base of information

that can be used in subsequent research to explore causal relationships or develop new theories. Descriptive research, therefore, acts as a crucial first step in the research process, providing a clear and structured view of the context being studied.

In the case of this study, it was possible to detail the phenomenon studied through a comprehensive characterization of artificial intelligence as a resource for school learning. This detailed analysis provided a complete and accurate picture of the impact and utility of AI in the educational setting, covering not only its practical applications, but also the benefits and challenges associated with its integration into classrooms. By examining how AI is used to personalize learning, optimize educational management, and support teachers in their activities, the study highlighted both significant advances and areas that require attention for effective implementation. In addition, educators' and students' perceptions of AI were explored, providing a comprehensive picture of how these technologies influence the educational process. This detailed approach allows for a deeper understanding of how AI can transform school learning, identifying opportunities to improve and adapt pedagogical strategies to the emerging needs of the educational environment.

Data collection through the application of a questionnaire to university teachers selected by means of a sample established by convenience, according to the voluntary participation of the teachers. The participants of the study were 23 university teachers, 17 of the female gender and 13 with master's degrees, most of them linked to the area of education in their work functions.

RESULTS

Given the current widespread use of artificial intelligence tools in educational contexts and their increasing use by members of the educational communities, an initial consultation was conducted to assess the knowledge of these technologies among the participants. It was found that only one respondent mentioned not knowing about these tools, indicating a high level of general familiarity among the participants. This result suggests that most members of the educational community are aware of emerging technologies and their potential in academia, reflecting a widespread awareness of the importance of AI in modern education. However, familiarity does not always translate into effective implementation, highlighting the need to explore how this knowledge is being applied in educational practice.

In addition, 17 of the participants mentioned having knowledge of AI tools aimed at writing and handling texts, while 12 reported knowing specific tools that support the elaboration of presentations. This high degree of familiarity suggests a growing integration of AI into everyday educational practices, underlining its importance and relevance in the development of technological competencies within the educational community.

The adoption of these tools for specific tasks not only improves the efficiency and quality of the work performed, but also reflects a recognition of AI as a valuable resource for facilitating various facets of the educational process. The ability of these technologies to optimize the production of content and the creation of teaching materials indicates a trend toward greater incorporation of technological solutions in teaching, evidencing a significant advance in the integration of AI in the academic environment.

Reply	Knowledge of AI tools	Knowledge of AI tools for writing and text handling	Knowledge of AI tools for presentation development
Yes	22	17	12
No	1	6	11

Table 1 Knowledge of artificial intelligence tools

Note: Own elaboration

Although general knowledge about AI tools was identified, it is crucial for the present study to recognize how artificial intelligence is effectively applied in educational activities. It was found that only 9 of the participants make active use of these tools in their daily practice. Of these, a notable use of ChatGPT stood out, which has become a popular tool not only for assistance in writing tasks and content generation, but also for facilitating interaction with students and personalizing learning. This limited use suggests a gap between the potential of AI tools and their actual integration into educational practice, emphasizing the need to encourage wider and more effective adoption of these technologies in academia.

This data highlights the significant gap between knowledge of digital tools and their effective implementation in the classroom. Although educators are aware of available technologies and their potential benefits, barriers to their full adoption persist. These barriers may include lack of specific training, limited access to adequate resources, and resistance to change in established teaching practices. In addition, the finding underscores the imperative need to develop ongoing training and support programs that not only instruct educators in the technical use of the tools, but also provide strategies for seamlessly integrating them into their teaching methodologies. Addressing these needs will enhance both student learning and efficiency in educational activities, fostering a more dynamic teaching environment adapted to current demands.

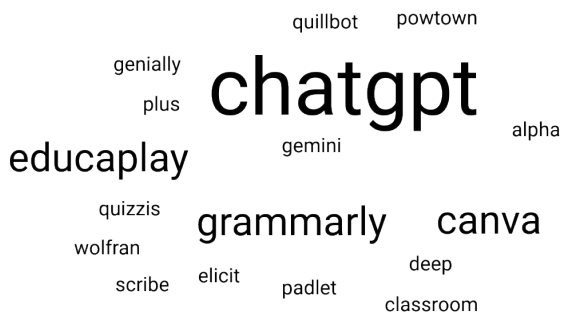


Figure 1. Tools used for the development of educational activities

Note: Own elaboration

Regarding the incidence of the use of AI in the development of teaching activities, it is observed that 7 of the participants believe that these tools have a direct impact on their professional work. However, 11 participants argue that the use of AI by students plays a crucial role in motivation and commitment to their professional practice, indicating that interaction with technology can positively influence the teaching dynamics. In addition, it was identified that a significant number of participants consider that AI tools significantly facilitate their role as teachers. These tools not only simplify lesson planning and management, but also allow for greater efficiency in the evaluation of student performance. Overall, the integration of AI appears to provide valuable support that optimizes teaching practices, allowing educators to focus on more creative and strategic aspects of teaching.

Reply	Number
Sometimes	13
Almost always	2
Always	7
Almost never	1

Table 2 Do AI tools facilitate teaching activities?

Note: Own elaboration

In relation to the motivation of students through the use of AI, 20 of the participants consider that these tools can increase this aspect, while 11 of the teachers identify that there is evidence of greater motivation and commitment to their implementation. On the other hand, the participants stated that at least sometimes, AI tools facilitate learning by students.

Reply	Number
Sometimes	12
Almost always	4
Always	6
Almost never	1

Table 3 Do AI tools allow you to better learn classroom topics?

Note: Own elaboration

DISCUSSION AND CONCLUSIONS

Rocketcontent (2020) proposes that artificial intelligence can offer elements that can improve the quality of life of university teachers by facilitating various tasks in the educational field. In particular, AI can optimize processes related to lesson planning and the management of teaching activities by automating repetitive tasks and enabling more effective personalization of content. In addition, AI can enrich the relationship between students and teachers by supporting continuous collaboration in the creation and adaptation of educational concepts and practices. This collaborative approach can contribute to a more dynamic and personalized teaching experience, while maintaining an ethical, humane and sustainable perspective. By integrating AI into these processes, it promotes not only efficiency in academic administration, but also a learning environment that is more responsive to the needs and expectations of both educators and students.

From this perspective, the use of digital tools among university students is influenced by a combination of factors, among which the student's attitude towards technology and the availability of devices and Internet connection stand out. In addition, the level of familiarity with digital tools and institutional support also play a key role in the effective integration of these technologies. These factors are determinants in the adoption of digital competencies, which not only facilitate access to information, but also enhance collaborative and autonomous learning, essential elements in the contemporary educational model (Oyarvide et al., 2024).

The results obtained determined that teachers recognize the use of AI as a valuable aspect that can enrich and support their educational role. In particular, teachers appreciate how AI contributes to the development of their activities by providing tools that facilitate the construction of content and inputs used in class. This recognition is reflected in the way AI-based technologies simplify the development of teaching materials, optimize lesson planning, and allow for more precise customization of educational resources. In addition, AI's ability to automate administrative tasks and analyze student achievement data frees up time for teachers to focus on more creative and pedagogical aspects of their work. This technological support has proven to be a significant factor in improving the efficiency and quality of the teaching-learning process (Lopes et al., 2023).

On the other hand, the participants' responses show a significant recognition of AI tools, with ChatGPT being one of the most mentioned, along with others that have gained popularity in the educational field. These tools are not only valued for their ability to facilitate lesson planning and the creation of presentations, but also for their usefulness in the development of interactive materials that encourage active student participation. By integrating

them into pedagogical processes, teachers can design more dynamic and personalized activities, which contributes to more attractive and effective learning. In addition, the use of these tools saves time on administrative tasks and allows to focus on direct teaching, optimizing the experience for both teachers and students.

AI helps to empower teachers to make adjustments to the content of educational spaces, so that variations in teaching and learning can be generated, while it is possible to identify the needs of groups of students and individual students, allowing the teacher "the possibility of not generalizing in the development of their classes, which makes students able to advance at their own pace and encourage interest" (Acevedo, 2023, p.5).

Lu and Harris (2018), established that the implementation of AI in education allows the automation of primary activities in the educational field, among which are the grading systems and the feedback provided by the teacher to each student. It also facilitates learning that adjusts to the needs of each student and the development of new methodologies in the classroom.

Although there are studies that determine the advantages of AI in education (Vera, 2023; Cotrina et al., 2021; Parra, 2022), the participants' responses show a growing recognition of these tools as a valuable support in their teaching work. In addition, a low concern is perceived about the possibility of AI negatively affecting their activities, suggesting a greater confidence in its use. These results reflect a progressive decrease in skepticism towards AI, evidencing that more and more teachers are willing to integrate these technologies in the classroom. As they become more widely adopted, AI tools not only complement teaching, but also open up new opportunities for innovation in pedagogical methods. This acceptance is a positive indication of AI's potential to sustainably and effectively transform education.

Another aspect that we sought to address in this study is related to the impact of the implementation of AI on student motivation during the learning process. In this sense, it was found that participants identify AI as an effective tool to stimulate students' interest and participation in their academic activities. Teachers recognize that AI tools, by offering more interactive and personalized learning experiences, contribute significantly to increased student motivation. This increase in motivation manifests itself in greater engagement with tasks and renewed enthusiasm for learning. In addition, the ability of AI to provide immediate feedback tailored to the individual needs of students strengthens the relationship between effort and perceived success, which promotes a more positive attitude towards studying. Therefore, the integration of AI tools in the classroom not only enhances the educational experience, but also drives greater student motivation and engagement.

As mentioned above, some studies have addressed the significant contribution of AI in the educational environment, highlighting its ability to promote more inclusive and participatory spaces, tailored to the needs and characteristics of students. However, the ethical dimension related to the excessive use of AI by students remains an aspect to be reviewed, since in many cases it can lead to a technological dependence that reduces their direct involvement in academic activities. In addition, concern is raised about the possible loss of cognitive and creative skills by delegating to AI tasks that traditionally fostered critical thinking. This challenge underscores the need for a balanced approach that maximizes the benefits of AI without compromising the holistic development of students (Popenici et al. 2017).

The implementation of artificial intelligence in the school environment has the potential to revolutionize the way in which teaching and learning take place. This technological innovation is expected to enable greater personalization of learning through adaptive tools that adjust content in an individualized way according to the student's behavior and needs. However, it is essential to remember that the main objective is still for the student to achieve real and meaningful learning.

The results of the study allow us to identify how participants are applying AI tools in the development of their teaching activities, highlighting that these elements act as significant supports in the tasks related to their educational role. The implementation of AI tools is manifested in various areas, from the creation of content and teaching materials to the automation of administrative processes and the personalization of learning.

It is evident that teachers are using these technologies to facilitate lesson planning, provide personalized feedback to students, and more efficiently manage their daily responsibilities. In addition, the adoption of different AI tools reflects a flexible and adaptive integration into teaching practice that is tailored to the specific needs and challenges of the educational environment. This diversity in the application of AI underscores its potential to enhance and diversify pedagogical strategies, bringing benefits in both administrative efficiency and the quality of the teaching-learning process.

AI is identified as a key factor in the educational process, as it not only favors student motivation, but also promotes greater active participation in learning spaces. Artificial intelligence tools have the ability to create more dynamic and interactive learning experiences, personalizing content according to the needs, skills and individual rhythms of each student. This helps to maintain interest and curiosity, essential factors for effective learning.

On the other hand, AI can provide real-time feedback, allowing learners to correct errors and improve their understanding immediately. This type of instant feedback is especially valuable, as it allows students to adjust their approach in the moment, which reduces the time between error and correction, significantly improving the learning process. In addition, by providing personalized solutions and resources, AI encourages a more autonomous learning approach, where learners can progress at their own pace and focus on their specific areas of improvement. This level of personalization and autonomy not only optimizes individual learning, but also promotes a more enriching educational experience tailored to each student's needs, resulting in increased motivation and engagement with the educational process. In the long term, this combination of real-time support and personalized learning can transform the way education is delivered and received.

In addition, AI enables the creation of personalized learning environments that respond immediately to students' queries and difficulties, fostering greater autonomy in their learning process. By providing instant feedback and adaptive resources, AI not only facilitates the identification of areas of difficulty, but also offers targeted solutions that help students overcome these challenges more efficiently. This personalized approach can adjust difficulty levels and offer learning strategies tailored to individual needs, promoting greater equity in access to education. Together, these capabilities contribute to a more inclusive and engaging educational environment, where students feel more engaged and motivated to actively participate in their education, optimizing their learning potential and enhancing their overall academic experience.

REFERENCES

- Acevedo, N. (2023). La inteligencia artificial en la educación: una herramienta valiosa para los tutores virtuales universitarios y profesores universitarios. *Panorama*, 17(32), 1-11.
- Bajaj, R., Sharma, V. (2018). Smart Education with artificial intelligence based determination of learning styles. *Procedia Computer Science*, 132, p. 834-842. doi <https://doi.org/10.1016/j.procs.2018.05.095>
- Cotrina-Aliaga, J. C., Vera-Flores, M. Á., Ortiz-Cotrina, W. C., & Sosa-Celi, P. (2021). Uso de la Inteligencia Artificial (IA) como estrategia en la educación superior. *Revista Iberoamericana de la Educación*.
- Flores, J. & García, F. (2023). Reflexiones sobre la ética, potencialidades y retos de la Inteligencia Artificial en el marco de la Educación de Calidad (ODS4). *Comunicar: Revista científica de comunicacion y educacion*, (74), 37-47.
- Hernández Sampieri, R., Fernández Collado, C., & Baptista Lucio, P. (2014). *Metodología de la investigación* (6.ª ed.). McGraw-Hill.
- León Rodríguez, G. C., Viña Brito, S. M. (2017). La inteligencia artificial en la educación superior. Oportunidades y Amenazas. *INNOVA Research Journal*, 2 (8), p. 412-422. doi:<https://doi.org/10.33890/innova.v2.n8.1.2017.399>
- Velasco, J., Naranjo, L., & Vinuesa, S. (2019). Las competencias digitales en docentes y futuros profesionales de la Universidad Central del Ecuador. *Cátedra*, 2(1), 76-97
- Lu, J. J., & Harris, L. A. (2018). *Artificial Intelligence (AI) and Education*. Congressional Research Services.
- Moreno, R. (2019). La llegada de la inteligencia artificial a la educación. *Revista de investigación en Tecnologías de la Información*, 7(14).

Ocaña, Y., Valenzuela, L. A., & Garro-Aburto, L. L. (2019). Inteligencia artificial y sus implicaciones en la educación superior. *Propósitos y representaciones*, 7(2), 536-568.

Oyarvide, N., Tenorio, E., Oyarvide, R., Oyarvide, H. & Racines, T. (2024). Factores influyentes para el uso de herramientas digitales en estudiantes universitarios. *Revista Científica De Salud Y Desarrollo Humano*, 5(2), 346-366.

Parra-Sánchez, J. S. (2022). Potencialidades de la Inteligencia Artificial en Educación Superior: Un enfoque desde la personalización. *Revista Tecnológica-Educativa Docentes 2.0*, 14(1), 19-27.

Popenici, S., Kerr, S., & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and Practice in Technology Enhanced Learning*, 12(1), 22

Rockcontent. (2020). ¿Cómo impacta la Inteligencia Artificial en la educación?. <https://rockcontent.com/es/blog/inteligencia-artificial-en-la-educacion/>

UNESCO. (2019). International Conference on Artificial Intelligence and Education. Final Report. Planning Education in the AI Era: Lead the leap.

Velasco, J., Naranjo, L., & Vinuesa, S. (2019). Las competencias digitales en docentes y futuros profesionales de la Universidad Central del Ecuador. *Cátedra*, 2(1), 76-97

Vera, F. (2023). Integración de la Inteligencia Artificial en la Educación superior: Desafíos y oportunidades. *Transformar*, 4(1), 17-34. Recuperado a partir de <https://www.revistatransformar.cl/index.php/transformar/article/view/84>