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REVIEW

Educational innovation with artificial intelligence and augmented reality

Innovación educativa con inteligencia artificial y realidad aumentada

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ABSTRACT

Introduction: the study analysed the importance of educational innovation through the incorporation of technologies such as artificial intelligence (AI) and augmented reality at primary level. The proposal focused on the Maryland Educational Unit in the province of Córdoba, where a need was identified to update teaching practices in line with current technological challenges. A training project was proposed for teachers to integrate these tools into the 2024 school year.
Development: the educational intervention included a three-stage plan: awareness, training and evaluation. It was based on National Education Law No. 26.206, which considers education a national priority, and on theoretical frameworks such as those of Freire and UNESCO on digital literacy. The project introduced the use of Chat GPT as a teaching assistant, capable of personalising learning, and augmented reality, which facilitated immersive, motivating and contextualised experiences. These tools made it possible to represent complex concepts and develop skills such as creativity, critical thinking and collaboration.
Conclusion: the implementation of the project sought to transform the pedagogical culture and strengthen the role of teachers as facilitators. It was concluded that training in AI and augmented reality is a key strategy for reducing the digital divide and improving educational quality. The experience reaffirmed that technology, used ethically, enhances learning and prepares students for the challenges of the 21st century.

Keywords: Artificial Intelligence; Augmented Reality; Educational Innovation; Teacher Training; Digital Literacy.

RESUMEN

Introducción: el trabajo analizó la importancia de la innovación educativa mediante la incorporación de tecnologías como la inteligencia artificial (IA) y la realidad aumentada en el nivel primario. La propuesta se centró en la Unidad Educativa Maryland, en la provincia de Córdoba, donde se identificó la necesidad de actualizar las prácticas docentes frente a los desafíos tecnológicos actuales. Se propuso un proyecto de capacitación destinado a docentes para integrar estas herramientas en el ciclo lectivo 2024.
Desarrollo: la intervención educativa contempló una planificación en tres etapas: sensibilización, formación y evaluación. Se fundamentó en la Ley de Educación Nacional N.° 26.206, que considera la educación una prioridad nacional, y en marcos teóricos como los de Freire y la UNESCO sobre alfabetización digital. El proyecto introdujo el uso de Chat GPT como asistente pedagógico, capaz de personalizar el aprendizaje, y la realidad aumentada, que facilitó experiencias inmersivas, motivadoras y contextualizadas. Estas herramientas permitieron representar conceptos complejos y desarrollar habilidades como la creatividad, el pensamiento crítico y la colaboración.
Conclusión: la implementación del proyecto buscó transformar la cultura pedagógica y fortalecer el rol del docente como facilitador. Se concluyó que la formación en IA y realidad aumentada constituye una estrategia clave para reducir la brecha digital y mejorar la calidad educativa. La experiencia reafirmó que la tecnología, utilizada éticamente, potencia el aprendizaje y prepara a los estudiantes para los desafíos del siglo XXI.

Palabras clave: Inteligencia Artificial; Realidad Aumentada; Innovación Educativa; Formación Docente; Alfabetización Digital.

INTRODUCTION

Today, technology is advancing rapidly, and education cannot be left behind. That is why, in this work, we will focus on educational innovation, specifically the use of artificial intelligence in schools.[1] In this work, we will specifically deal with GPT chat and virtual reality in education.

It is for this reason that the Maryland Educational Unit in the province of Cordoba sees the need for updating and training in new technologies, specifically at the primary level.

This work will focus on 'Innovative learning models,' which are strategies that enhance teaching and learning approaches, facilitate classroom communication, make explanations more engaging, aid in understanding the content clearly, facilitate knowledge acquisition, and reinforce learning.

With the technological advances in the present digital era, a rethink of teaching models is called for. To this end, teachers must incorporate ICT into classroom learning to develop new skills, enabling them to remain competitive in today's world.

Artificial intelligence (AI) is revolutionizing education with tools that personalize learning, provide instant feedback and free up valuable teacher time to focus on student interaction. By adapting to each student's pace and learning style, AI helps identify and improve their understanding of the material, ensuring they achieve their maximum potential.[1]

It is claimed that the acquisition of Artificial Intelligence tools in the classroom will enhance students' competencies by incorporating the tools, thereby improving the quality of education.

DEVELOPMENT

The National Education Law No. 26,206, approved in 2006,[3] represents a crucial step in the process of recovering education to build a fairer society. Its contents and objectives aim to address the problem of inequality.

As stated in Article 3, education is a national priority and constitutes a state policy to build a just society, reaffirm national sovereignty and identity, deepen the exercise of democratic citizenship, respect human rights and fundamental freedoms, and strengthen the nation's economic and social development.

It aims to address the challenges of a society where universal access to quality education is a prerequisite for complete social integration and inclusion. It regulates the exercise of the right to education and learning enshrined in Article 14 of the National Constitution. Similarly, the National Education Act stipulates in Article 3 that education is a national priority, builds a just society, reaffirms national sovereignty and identity, and respects democratic citizenship and human rights. It also constitutes a national policy to deepen the exercise of fundamental freedoms.

Educational intervention is a series of actions that involve motivation, pedagogy, methodology, and evaluation and are executed by intervention agents, whether institutional or individual. These actions are carried out to implement a pre-established program and help individuals or target groups achieve the objectives defined in that program. Any attempt to transform the educational reality must begin with a profound reflection on the type of intervention that is intended to be carried out.[4]

Essentially, an intervention aims to bring about change, usually in knowledge, attitudes, or practices. This change was evaluated by comparing pre- and post-intervention data, emphasizing the importance of using an accurate methodology in this process.[5,6]

As defined by UNESCO,[7] digital literacy is the ability to access, manage, understand, integrate, communicate, evaluate, and create information from digital technologies for employment, appropriate work, and entrepreneurship through confident and relevant use. This includes computer literacy, ICT literacy, and media education to empower people to adopt a critical attitude towards the use of information and digital technologies.

As the United Nations Educational Union states: Review and dynamically define the roles of teachers and the competencies they need in the context of teacher policies, strengthen teacher training institutions, and develop appropriate capacity development programs to prepare teachers to work effectively in educational environments with a strong presence of artificial intelligence.[7]

Following this line and considering the reality of education and virtuality, it is necessary to investigate what new teaching tasks can be designed in the field of online science today. Nowadays, the use of artificial intelligence and all that it entails or generates can be demonstrated and analyzed mainly in the classroom, and it is essential to understand it to comprehend its applicability.[1,8]

ChatGPT is a computer program based on what we know as Artificial Intelligence. It generates texts like

a chatbot. When you enter its page, all you have to do is ask a question, and it will immediately provide an answer, it generates adapted answers:

1. To the context of the question
2. To the user's request
3. To the degree of training of your algorithms.

Therefore, if two users ask the same question, they may receive similar answers but not identical ones.[9]

Blázquez Sevilla[1] states that augmented reality can be described as extra data obtained by observing an environment through the camera of a device with special software. This additional information can be presented in various formats, such as images, image carousels, audio files, videos, or links.

Some of the applications of augmented reality use, according to Blazquez Sevilla (2017), can be:

- In laboratories: the instructor incorporates information into various lab elements, allowing students to access this information.
- In fieldwork: it enables the object of study and knowledge to be linked in the same time and place. For example, city tours can be organized to visit landmarks and discover relevant information about statues, buildings, monuments, etc. Similarly, species identification and geographical features can be explored.
- For events: such as exhibitions, seminars, conferences, or meetings. Assistants and speakers can utilize QR codes on posters, brochures, or catalogs. This serves as a valuable resource for embedding extensive event-related information.
- In books: both electronic and print formats can incorporate augmented reality. Text, illustrations, headers, or footnotes act as triggers for additional content (e.g., author biographies, footnotes, explanatory videos, supplementary texts, or audio).
- For off-site educational visits: museums, galleries, factories, and businesses integrate augmented reality into tours, providing visitors with comprehensive and visually engaging information. Beyond learning the subject matter, students develop skills through using this technology.
- Augmented reality has proven to significantly facilitate learning and interdisciplinary skill development in fields like biology, art, history, design, languages, geography, etc.

Augmented reality is revolutionizing the world of education by providing new learning opportunities. The benefits obtained in the teaching-learning process include, among others, an immersive experience, personalization of learning, promotion of collaborative work, and simulation of real-life situations.

Moreover, augmented reality has applications in various educational areas, broadening teaching possibilities and providing more enriching learning experiences.

These tools are necessary in a technologically globalized world. Fortunately, Argentina is at the forefront of new technologies due to its significant development and the export of technological services. In this framework, it is necessary for children from primary school to begin getting involved with ICT. This project aims to promote the use of new technologies in teachers and pupils, preparing them to become involved in the use and application of digital tools.

Taking as a precedent, the research work carried out by the University of Pent Flacso: Artificial intelligence and active learning Research and design of teaching strategies with AI in schools, where it was possible to investigate and promote the inclusion of artificial intelligence in various educational proposals. Assuming that learning is an active process during which the student acquires knowledge about the activities planned by the teacher.[10]

It´s necessary to design teaching strategies with activities that utilize artificial intelligence, focusing on the potential of this technology and promoting key skills such as communication, critical thinking, collaboration, and creativity —skills also known as those of the 21st century.[11]

It is necessary to develop strategies for effective discussion based on critical questioning. The classroom environment was considered a suitable space to foster collaboration among students. Creativity and innovation were developed: inspiration, curiosity, new challenges, and exploring different possibilities. This activity allowed students to test new technologies and apply creative approaches in the classroom. Instead of discarding technology, teachers are beginning to consider how to formally integrate tools like ChatGPT into their teaching methods, recognizing that it is better to use them openly and remain cautious about hidden usage. This shift in attitude highlights the importance of adaptability and flexibility in education, especially in the digital and artificial intelligence era.

CONCLUSIONS

Educational innovation, through the incorporation of technological tools such as artificial intelligence and augmented reality, has become an urgent necessity within today's educational system. Artificial intelligence,

represented here by the use of ChatGPT, serves as a valuable tool for both educators and students. Its capacity to generate content, provide personalized assistance, and facilitate task resolution makes it a powerful pedagogical resource that can enrich the teaching-learning process. Likewise, its integration has driven a paradigm shift in teaching practices by fostering the development of key skills such as critical reflection, creativity, and effective communication. Similarly, augmented reality offers immersive and interactive experiences that enhance the understanding of abstract concepts, interdisciplinary learning, and student motivation. The applicability of this technology across diverse contexts—laboratories, educational field trips, books, and academic events—expands the boundaries of the traditional classroom, immersing students in a more dynamic and meaningful educational environment. Educational innovation is not merely about incorporating technological devices; it involves transforming pedagogical culture and adapting teaching methods to new social, cultural, and professional demands. The need to reimagine the teacher's role—not as a mere transmitter of knowledge, but as a guide and facilitator of learning—was emphasized. This entails designing educational experiences that integrate technology, critical thinking, and ethical values. Furthermore, the importance of structured, progressive, and context-sensitive implementation was underscored. Through phased planning—from institutional diagnostics to collaborative evaluation with administrators—favorable conditions were created for teacher professional development, promoting collaborative work and the pedagogical appropriation of technology. The theoretical references consulted and international precedents reinforced this proposal, validating its relevance and efficacy. Experiences from other institutions, such as FLACSO's research on AI and active learning, reaffirmed that these tools can be integrated without dehumanizing education. Instead, they deepen student interaction and critical engagement.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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