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Technologies for automation of online learning and teaching, adaptation of content and personalization of the learning process

Tecnologías de automatización del aprendizaje y la enseñanza en línea, adaptación del contenido y la personalización del proceso de aprendizaje

[1]Erika Mirella Gutierrez Sullca

[1]Universidad Nacional de Huancavelica

Abstract

Education is fundamental in the development of every human being; However, the evolution of technology combined with education gave rise to online education. The automation of learning in education provides beneficial benefits, one of the most significant tools is the incorporation of artificial intelligence, which allows the personalization of content tailored to users who use online learning platforms. In conclusion, the potential of learning automation in online education is promising; Continuous technological evolution foresees substantial improvements in the generation of personalized content.

Keywords: Technology, automation, teaching, learning, artificial intelligence.

Resumen

La educación es fundamental en el desarrollo de todo ser humano; sin embargo, la evolución de la tecnología aunado a la educación, dio lugar a la educación en línea. La automatización del aprendizaje en la educación brinda beneficios provechosos, uno de las herramientas más significativas es la incorporación de la inteligencia artificial, que permite la personalización del contenido a medida para los usuarios que hacen uso de las plataformas de aprendizaje en línea. En conclusión, el potencial de la automatización del aprendizaje en la educación en línea es prometedora, la continua evolución tecnológica prevé mejoras sustanciales en la generación de contenido personalizado.

Palabras claves: Tecnología, automatización, enseñanza, aprendizaje, inteligencia artificial.

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INTRODUCTION

Education is considered one of the pillars of the formation of every human being. Currently it is influenced by the evolution of information technologies that has led to the creation of online education. Online education has massified education in general, allowing access to knowledge at flexible hours and ubiquitously. In the digital educational landscape, another relevant aspect that has positioned this type of education as an alternative to traditional education is the incorporation of artificial intelligence in the educational process (Akram et al., 2022).

The advantage provided by artificial intelligence is based mainly on personalization, a fundamental element for optimizing the effectiveness and relevance of online education.

Due to the continuous evolution of artificial intelligence, improvements are expected to current online education, allowing the inclusion of vulnerable populations, providing quality tailored education.

The rise of online education

Access to knowledge and acquisition of skills was transformed by the emergence of online education, the combination of technological factors, flexibility and accessibility, as well as the need for learning gave rise to this new form of education. The expansion of the Internet and the proliferation of digital devices democratized access to information, allowing the creation of educational platforms that are accessed using a device connected to the Internet. Online education offers flexibility in contrast to traditional education, students can adapt their study schedules at their own discretion, this flexibility is beneficial for those students who are subject to activities that do not coincide with traditional class schedules, mainly daytime schedule. Coupled with the flexibility of schedules, the wide diversity of educational programs of different disciplines and educational levels, from certified courses to complete educational programs, allows users to obtain a degree of specialization in areas of interest, obtaining skills, updating their knowledge and improving their educational level. In addition to the diversity that can be obtained, online education presents a greater degree of accessibility in costs associated with payment amounts in traditional education, such as transportation, boarding materials and others. Financing for online education is flexible, expanding access to education. Online education is increasingly relevant, the impact on people's education, driven by the continuous evolution of technology, positions it as a highly accessible alternative to keep people updated in the field of knowledge.

The revolution of artificial intelligence in education

Artificial intelligence encompassed the field of education, revolutionizing the teaching-learning process. The integration of AI into online education allows for the personalization of teaching, transforming the educational experience for students of all levels, allowing them to learn at their own pace.

Virtual assistants are another significant contribution; these systems provide students with instant support and personalized guidance, responding to their queries, providing additional

explanations and feedback on learning through personalized exercises based on personal progress and performance.

The role of the virtual assistant is similar to that of a tutor, bridging the gap between online education and traditional education (Lima & Fernández, 2017).

Various functions can be automated by AI, from grading assessments with personalized feedback, predicting performance based on historical performance data, and developing personalized thematic content based on the aforementioned elements.

The personalization of learning through artificial intelligence

Personalization is undoubtedly one of the most important achievements that has been achieved with the implementation of AI in education, generating content according to individualized needs and preferences.

To begin the personalization process, the platform that houses the AI collects student information from their interaction, obtaining their preferences, learning styles, interests and abilities, based on which a study plan adapted to them will be designed and directed. the specific needs perceived by the AI (Ali & Kazim, 2021).

The development of personalized educational material in turn adapts to the pace of learning according to the speed of knowledge absorption of each student, guaranteeing the achievement of the learning process. This process allows the student to have greater control over their own learning process, obtaining greater autonomy that results in effective and meaningful learning (Frances & Ortiz, 2021).

The role of data in machine learning

Data collection, analysis, and application are essential in personalizing learning. Through the data, the understanding of behavior patterns, preferences and areas for improvement of each student is achieved. The data obtained is translated into information that will allow the adaptation of educational material, teaching strategies and feedback (Vargas et al., 2022).

As data collection becomes more advanced, its interpretation provides more complex information, allowing machine learning algorithms to be more sophisticated, achieving precise and effective personalization, guaranteeing an increasingly enriching teaching-learning process for the user.

The future of online education with artificial intelligence

Integrating artificial intelligence in education is considered an important and significant milestone in promoting the improvement of the teaching-learning process. Currently, its impact is notable, as multiple online education platforms adapted, managing to differentiate themselves and obtain a greater number of users. The continuous advances in AI raise new applications and ways of working in learning platforms. Natural interaction through virtual assistants is one of the advances that is sought to be achieved, in combination with natural language, the aim is for them to be able to use an increasingly human language and understand the needs of each student, achieving an interaction more fluid.

An aspect that is becoming increasingly relevant is inclusion, technology is available to everyone;

However, there is a certain vulnerable population that does not have all its faculties, and access to technology may be difficult for them; In this sense, artificial intelligence, analyzing these characteristics, could adapt to their needs and enhance aspects that make them difficult, democratizing access to technology and learning (Jiménez et al., 2022).

DISCUSSION

Addressing learning in recent years does not focus solely on the traditional teaching-learning process. The evolution of technology led to the origin of powerful tools such as Artificial Intelligence. Online educational platforms are no longer new; However, the incorporation of artificial intelligence into its operation allows it to diversify its operation to adapt it to users in a personalized way. Other technologies are used to enhance online learning, such as the digitization of information, audiobooks, incorporation of video classes and the like. The limited customization capacity of these materials makes us consider them as support tools to resort to at any given time. On the other hand, Artificial Intelligence allows dynamism in the teaching-learning process, personalizing educational materials based on the student's retention and advancement capacity, making online education a reliable alternative with the purpose of promoting knowledge and continuous updating.

CONCLUSIONS

Online education will continue to evolve with the incorporation of new tools that improve user interaction. The path towards an effective, inclusive and student-centered education finds its threshold for improvement in the evolution of technology. The future of online education with artificial intelligence is promising. The continuous evolution of technology allows artificial intelligence to be integrated into various processes that will benefit students in their learning process.

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