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APPLICABILITY OF EMERGING TECHNOLOGIES IN VIRTUAL LEARNING ENVIRONMENTS. A LOOK AT THE UNIVERSITY OF GUAYAQUIL

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KEYWORDS

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ABSTRACT

The objective of the study was to determine the applicability given by teachers of the University of Guayaquil to emerging technologies in virtual learning environments. It assumed the quantitative approach, descriptive type of research, and field design, non-experimental, cross-sectional. It was conducted during the second period of 2022. The population under study was 287 teachers of the Faculty of Philosophy, Letters and Educational Sciences, the sample consisted of 166 teachers after applying a simple random sampling.

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1. Introduction

Emerging technologies (ETs) are those that are in the process of development or are currently being implemented and have the potential to have a major impact on society in its different sectors. These technologies include everything from artificial intelligence and robotics to virtual and augmented reality, the Internet of Things, autonomous vehicles, renewable energy, and others (Ferreira da silva, 2018), (Valle-Cruz & Gil-García, 2022)..

Their rapid advancement and constant innovation pose a host of challenges and opportunities for businesses, governments, communities, educational institutions and individuals. ET have great applicability in virtual learning environments. (Mora-Vicarioli & Salazar-Blanco, 2019), (Carrera Tapia et al., 2022)., (Verdín Torres, 2022); e.g., artificial intelligence, virtual and augmented reality, and mobile learning can be used to enhance the learning experience and increase learner motivation (Solorzano et al., 2023), (Yanza Chávez & Montalvo Armijos, 2023)..

On the other hand, virtual learning environments offer a large number of tools and resources to learners so that they can learn more efficiently. (Moreno Mercado, 2022), (Uribe-Posada et al., 2022).. In addition, they allow access to educational resources at any time and from any place, which facilitates learning in distance or online education environments (Engel & Coll, 2022), (Ruiz Tirado, 2022), (Barranco, 2023).

Emerging technologies can help create more interactive, accessible and effective virtual learning environments. Their use is an increasingly common trend in universities around the world. In Ecuador they are being used in universities; for example, at the Universidad Politécnica Salesiana, they are used in its inverted classroom teaching model. (Rivera Calle & García Martínez, 2023).. In addition, the Universidad Técnica de Manabí uses them to strengthen its teaching process (Olarte Ciprián, 2023). (Olarte Ciprián, 2023).. At the University of Guayaquil, according to the literature review, emerging technologies are being used in virtual learning environments to strengthen the teaching and learning process (Rocano Parrales, 2023). (Rocano Parrales, 2021).; (Villamar Irrazabal et al., 2021).; (Cantuña Avila & Cañar Tapia, 2020).. However, they do not specify exactly which emerging technologies they are using and what their applicability is. In this context, the following question was generated: What is the applicability of emerging technologies in virtual learning environments provided by teachers at the University of Guayaquil? Therefore, the objective of this study was to determine the applicability given by the teachers of the University of Guayaquil to emerging technologies in virtual learning environments.

Methodology

The research assumed the quantitative approach, descriptive research type, and field, non-experimental, cross-sectional design. It was conducted during the second period of 2022. The study population consisted of 287 teachers of the University of Guayaquil, Faculty of Philosophy, Letters and Educational Sciences. Thus, the sample consisted of 166 professors after applying a simple random sampling and the formula of (Murray & Larry, 2009).

For data collection, the study relied on the survey technique and a questionnaire as an instrument, structured by 10 items, with a Likert-type scale; which measured six dimensions with the purpose of determining the applicability given by the teachers of the University of Guayaquil to the emerging technologies in virtual learning environments. The reliability was 0.85, determined by pilot test, 0.88 applying Cronbach's Alpha coefficient, consequently, it was considered highly reliable. It was validated by five experts. The results were tabulated for presentation and SSPS ® 27.0 was used for data processing; using descriptive statistics.

3. Results

As evidenced by the results obtained in the study, it was determined the applicability given by the teachers of the University of Guayaquil to emerging technologies in virtual learning environments, in this regard it was found that most of them always make use of online education platforms or specific software for remote teaching, which was established due to the irruption of technologies in higher

education because of the arrival of the pandemic caused by covid-19. (Espinosa Izquierdo et al., 2023).; (Angulo et al., 2021).

These teachers expressed that they always use and integrate AI and mobile learning in virtual learning environments in their classes; this result as stated by (Pascuas-Rengifo et al., 2020) favors the adoption of M-Learning as a priority for an adequate promotion of other tools such as: augmented reality, virtual reality, gamification, and integration of artificial intelligence as elements that favor education; however, the teachers participating in the study stated that they have almost never or never used virtual reality and the internet of things; and sometimes have used augmented reality; which allows inferring that it is necessary to investigate the causes of the little use of these emerging technologies with all the impact that has been unveiled in studies such as: (Toala-Palma et al., 2020); (Aguirre-Herráez et al., 2020). González et al (2017)

Regarding artificial intelligence as an emerging technology with a high impact at the educational level (Solórzano Álava et al., 2022) it was found that these teachers hardly ever or never use chatbots, learning gamification platforms or data analysis systems; they only sometimes make use of machine learning tools. With reference to AI tools, it was found that teachers never or almost never use the TensorFlow tool, nor Keras, nor PyTorch, nor OpenCV, nor IBM Watson.

However, it was found for the frequency of use of educational chatbots that ChatGPT is always used; and others such as Ada Supporten, Google's Dialogflow, Aivo Conversational, Tras are almost never or never used. Thus, as expressed by (García-Peñalvo, 2023) due to the innovative nature of these tools, there are few empirical studies that show the impact of these technologies at the educational level. The popular ChatGPT phenomenon has been studied by several researchers (Alonso-Arévalo & Alonso-Arévalo, 2023). (Alonso-Arévalo & Quinde-Cordero, 2023); (De Vito, 2023); (Vera, 2023)(Alonso-Arévalo & Quinde-Cordero, 2023) ; where it is highlighted that it can be seen as an opportunity for innovation in education if the tool is well known, as well as its benefits and negative impacts. Regarding the use of the search engine that uses AI, it was obtained that Google was always used; however, Bing was sometimes used, as well as Amazon AI and You.com; while Microsoft Azure AI was never used. This result coincides with the one found by (Injante Oré, 2020) who stated that more than 76% of people around the world prefer Google search. Finally, teachers mostly expressed that they have a good perception of the applicability given to emerging technologies in their virtual learning environments; however, they indifferently perceive the change in their students' learning outcomes due to the use of emerging technologies. Nevertheless, some studies (Fajardo Pascagaza & Cervantes Estrada, 2020) suggest that the use of emerging technologies in virtual learning environments can lead to significant changes in the development of competencies and in the improvement of student learning outcomes.

4. Conclusions

The study determined the applicability given by teachers at the University of Guayaquil to emerging technologies in virtual learning environments, concluding: that teachers always use and integrate in their classes AI and mobile learning in virtual learning environments, but almost never or never have used virtual reality and the internet of things; and sometimes have used augmented reality; almost never or never use chatbots, nor learning gamification platforms; nor data analysis systems; only sometimes make use of machine learning tools.

ChatGPT is always used; and others such as Ada Supporten, Google's Dialogflow, Aivo Conversational, Tras are almost never or never used. Regarding the use of search engine using AI, it was obtained that Google was always used; however, Bing was sometimes used, as well as Amazon AI and You.com; while Microsoft Azure AI was never used. Finally, the majority of teachers expressed that they have a good perception of the applicability of emerging technologies in their virtual learning environments; however, they perceive indifferently the change in the learning outcomes of their students due to the use of emerging technologies.

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