

IMPROVING MATHEMATICS EDUCATION THROUGH E-LEARNING

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Rapid technological growth is not something new today. However, this fact impacts our society, especially in education. Technological advancements facilitate, strengthen, and speed up the performance of daily tasks in schools.

Information and communication technologies (ICTs) are the technological progress reflected and incorporated in schools. ICTs significantly impact the development of teaching and learning processes since they promote innovative pedagogical actions and generate new learning spaces. The pedagogical events improve the transformation of the classroom as we know it since they allow for the elimination of spatial-temporal barriers and access to a large amount of information in different formats. In addition, technology promoted the improvement of several domains of student learning, such as motivation, autonomy, involvement, and attitude towards educational content (Moreno-Guerrero, Aznar-Díaz, Cáceres-Reche & Alonso-García, 2020).

Mathematics is a vital instrument for deciphering the closest environment and representing various social, scientific, or technical facts in today's world. Mathematics facilitates different understandings of phenomena, such as social reality, economic aspects, or historical facts. In this case, mathematics becomes an appropriate and essential tool for acquiring knowledge, reflecting on social elements, and representing facts from the environment. Mathematics tries to transform all the accepted facts into helpful knowledge and information. Additionally, mathematics can be used as a language that allows the phenomena to be explained in detail and precisely (Williamson, 2018; Kartal, Caglayan & Buchet, 2018).

The use of e-learning in classroom instruction in the 21st century becomes a challenge because an average level of digital competence for both teachers and students is required to apply it effectively (Aznar, Cáceres, & Romero, 2019). Additionally, the availability of devices and good internet connection also pose a problem in implementing e-learning. Therefore, they need to be trained in using various technological and digital resources (Aghababaei & Ardani, 2018).

There are educational innovations in mathematics education in which e-learning has been developed as a teaching method. One good example of an e-learning pedagogy is the MCIEC model (motivation, context, interactivity, evaluation, and connectivity), which entails greater student involvement (Ahn & Edwin, 2018). This model allows students to improve their ability to make an effort to understand mathematical content. This is possible due to the increased interest, motivation, and adaptation to the context. The development of the e-learning method provides advantages for the educational system as a whole if it is effectively implemented with an appropriate teaching and learning method (Moreno-Guerrero, Aznar-Díaz, Cáceres-Reche & Alonso-García, 2020).

The use of e-learning in teaching and learning mathematics increases students' involvement and commitment, improving performance. It also increases interest and, thus, acquires better results. In addition, it also enhances the acquisition of mathematical content. Finally, it should be noted that the e-learning method will be advantageous to students' independent learning and adapting to learning styles, which means there is a need for more individualized attention to the teaching and learning process (Moreno-Guerrero, Aznar-Díaz, Cáceres-Reche & Alonso-García, 2020).

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