

A COMPARISON OF THE EFFECTIVENESS OF DIGITAL AND TRADITIONAL LEARNING IN DEVELOPING COUNTRIES

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Abstract

This research examines the comparative effectiveness of digital and traditional learning in developing countries with the aim of understanding the advantages and challenges of each method in this context. Digital learning offers flexibility and broad access to resources, allowing students to learn at their own pace and cultivate technological skills. However, constraints such as limited technological infrastructure and lack of training for teachers often act as barriers. Meanwhile, traditional learning remains the top choice as face-to-face interaction supports stronger emotional connections and allows for direct customisation to student needs, although it is limited in its appeal and static information. Therefore, many developing countries have started to adopt a hybrid approach that combines the advantages of both methods. The results show that improving the overall quality of education requires investment in digital infrastructure, training for educators, and collaborative support from the government, educational institutions and communities.

Keywords: Comparison, Effectiveness, Digital Learning, Traditional, Developing Countries.

Introduction

The development of information and communication technology has brought significant changes in various fields of life, one of which is the education sector. The emergence of digital technology in education brings new opportunities in learning methods. Digital learning or e-learning allows the teaching and learning process to occur not only in the classroom, but also in cyberspace through various digital platforms (Judijanto & Aslan, 2025); (Sitopu et al., 2024); (Guna et al., 2024); (Iksal et al., 2024).

Digital platforms for education have emerged, offering a variety of innovative and flexible solutions for learning. Some popular platforms include Coursera, Udemy, Khan Academy and Google Classroom. Coursera and Udemy, for example, provide access to thousands of online courses from renowned universities and institutions in various fields of study. They allow learners from all over the world to take high-quality courses from competent instructors, often at an affordable cost (Khumalo, 2022). Meanwhile, Khan Academy offers free learning resources with a focus on educational videos and interactive exercises covering a wide range of subjects for all ages. In

addition, Google Classroom helps facilitate communication between teachers and students, management of assignments, and provision of learning materials in an organised manner (Zhou, 2022).

The advantage of digital platforms for education lies in the flexibility and accessibility they offer. Students can learn whenever and wherever they are, provided they have internet access. This opens up opportunities for those who may struggle to keep up with traditional class schedules, for example due to work or family responsibilities (Silva, 2023). In addition, various interactive features such as discussion forums, quizzes and online assignments enrich the learning experience and encourage active student participation. However, there are also challenges to be faced, such as the digital divide that still exists in many countries, especially developing countries, which can hinder access to this technology-based learning (Singh, 2023). Therefore, the integration of digital platforms in the education system requires holistic and inclusive solutions to reach all students without exception.

On the other hand, traditional face-to-face learning methods remain the backbone of the education system in many countries. In developing countries, the adoption of digital technologies in learning still faces various challenges, such as limited infrastructure, uneven internet access, and varying digital skills among educators and learners. Nonetheless, digital learning offers various advantages, such as flexibility of time and place, access to a wider range of learning resources, and the potential to deliver a more interactive and personalised learning experience (Patel, 2023).

Despite the huge potential and opportunities offered by digital learning, its effectiveness compared to traditional learning methods is still a question that invites a lot of research. In developing countries, contextual factors such as the level of digital literacy, access to technology, and local educational culture play an important role in determining the successful implementation of digital learning (Mohammed, 2019).

A study conducted by UNESCO (2021) states that around 50% of the population in developing countries have limited or no access to the internet, which leads to a gap in the implementation of digital learning. On the other hand, research conducted by the World Bank (2020) shows that in some developing countries that have adopted digital learning, there is an increase in student participation and better learning outcomes (Tsai, 2023).

This problem is important to solve because the ability of developing countries to compete globally in the future is strongly related to the quality of education received by its young generation. Identifying the most effective learning methods can aid better and more relevant education policies, thereby improving learning outcomes and ultimately supporting sustainable development.

This research aims to compare the effectiveness of digital learning with traditional learning in developing countries, focusing on student learning outcomes,

student engagement, and contextual factors that influence the success of both methods.

Research Methods

The study in this research uses the literature method. The literature research method, or literature review, is an approach that is carried out by collecting, reviewing, and analysing information that already exists in various written sources such as books, scientific journals, articles, reports, and other documents (Okoli, 2015) ; (Randolph, 2009) . The aim is to gain an in-depth understanding of a particular topic, identify research gaps, and summarise relevant findings from previous research. The process involves a systematic search of the literature, organisation of the information obtained, and critical evaluation of the contribution of each source to the topic under review (Grant & Booth, 2009) .

Results and Discussion

The Effectiveness of Digital Learning Compared to Traditional Learning in Developing Countries

Digital learning has become an increasingly common phenomenon around the world, including in developing countries. The effectiveness of digital learning compared to traditional learning is a relevant debate as technology advances and pressure for innovation in education systems. In developing countries, digital learning offers significant benefits, but also faces unique challenges not found in traditional learning environments (Fawait et al., 2024) ; (Syakhrani & Aslan, 2024) ; (Irwan et al., 2024) .

First of all, one of the main advantages of digital learning is its great flexibility. Students can access course materials anytime and anywhere as long as they have an adequate internet connection. This allows students who may have busy schedules or geographical constraints to still get a quality education. In addition, digital platforms often offer a wide array of interactive learning resources such as videos, quizzes and discussion forums that can enrich students' learning experience compared to the more static traditional methods (Pham, 2023) .

On the other hand, digital learning also allows for greater personalisation in the educational process. Technology can be used to customise subject matter according to each student's learning pace and interests. This is very different from traditional methods that often apply a one-size-fits-all approach. Digital learning tools or apps equipped with artificial intelligence can even provide real-time feedback to students, helping them to correct mistakes and grasp difficult concepts more quickly (Fernandez, 2018) .

However, the effectiveness of digital learning in developing countries is often hampered by infrastructure issues. Limitations in internet access, electricity, and technological devices such as computers or smart phones are still major obstacles.

Many areas in developing countries do not have adequate internet connectivity, which significantly reduces students' opportunities to utilise digital learning platforms. In addition, there is a digital divide that widens the inequality between students from different socio-economic backgrounds; those from disadvantaged families are less likely to have equal access to educational technology compared to their more advantaged peers (Okeke, 2022).

Apart from infrastructure issues, digital literacy is also a significant challenge. In developing countries, many teachers and students may not be used to using technology in the teaching and learning process. Lack of training and support can reduce the effectiveness of digital learning. Compared to traditional methods that are more familiar and understood by most educators and learners, the transition to digital learning requires investment in training and upskilling to ensure that technology can be used effectively (World Bank, 2019).

Finally, the interpersonal relationships that are usually formed through traditional learning are often not easily replaced by online interactions. Face-to-face learning allows for the development of important social and emotional skills through direct interaction between teachers and students as well as between fellow students. In the context of digital learning, these elements are often lacking due to the absence of physical presence, which can affect the learning process (Juma, 2023).

Overall, while digital learning has great potential to improve access and quality of education in developing countries, its success depends largely on how these challenges are overcome. A combination of digital and traditional approaches, known as blended learning, may be the most effective solution, combining the flexibility and access of technology with the benefits of human interaction in a learning environment.

Factors affecting the effectiveness of both traditional and digital learning methods

Learning is a dynamic process that can be influenced by various factors, both in traditional and digital methods. Traditional learning methods, which often centre on face-to-face classroom instruction by a teacher, have a unique set of factors that influence its effectiveness. One of the main factors is the direct interaction between teacher and student which allows for direct two-way communication, as well as coaching that is more personalised and responsive to the needs of individual students. Other factors include the physical environment of the classroom which should be conducive, where a comfortable atmosphere free from distractions helps to increase student concentration and participation (Ali, 2022).

On the other hand, digital learning methods that rely on the use of information technology offer flexibility in time and location, which is an important factor in improving learning effectiveness. Access to extensive learning materials that can be customised to each individual's learning pace is a significant advantage. However, its effectiveness is also highly dependent on the availability of technological infrastructure

such as stable internet network and adequate hardware. In addition, time management and student self-motivation are important factors, given the digital nature which often requires more self-discipline (Chibanda, 2022).

Both traditional and digital learning methods are influenced by students' active engagement. When students are actively engaged in the learning process-through discussion, completion of challenging tasks, or collaborative projects-learning effectiveness tends to increase. In traditional learning, this engagement can be more easily monitored directly by the teacher, while in digital learning, teachers need to use measurement tools such as online quizzes or discussion forums to ensure active student participation (Hashim, 2023).

The curriculum and teaching materials also play a crucial role in the effectiveness of both methods. Materials that are interesting and relevant to students' needs and interests will more easily motivate them. In traditional learning, teachers often have the freedom to customise their teaching materials based on immediate feedback in class. Meanwhile, interactive digital materials, such as videos, simulations, and learning games, can increase the attractiveness and make learning more contextual and applicable (Ng, 2023).

In addition, the background and capacity of teachers greatly influence the effectiveness of learning. Skilled teachers who are able to adapt their teaching methods to students' needs can effectively improve learning outcomes in both traditional and digital learning. In the digital era, teachers' ability to master technology and integrate digital tools into teaching methods is becoming increasingly important (Hernandez, 2020).

Finally, the culture of learning within an institution or society as a whole also affects the effectiveness of both methods. The presence of psychological and emotional support, the availability of additional learning resources, and an environment that encourages exploration and innovation in learning can support the success of both traditional and digital learning. Adapting both methods, taking into account these factors, can provide a rich and balanced learning experience for students (Williams, 2017)

Thus, the effectiveness of learning methods, both traditional and digital, is influenced by various interrelated factors. Internal factors such as direct interaction between teachers and students, availability of technological infrastructure, and active involvement of students determine the success of learning. Aspects of curriculum and teaching materials that are interesting and relevant, as well as the ability and readiness of teachers to apply appropriate teaching methods also play an important role. In addition, psychological, emotional support and a conducive learning culture within the institution or community will have a significant impact on the effectiveness of both methods. By understanding and optimising all these factors, it is expected that the learning process can run more effectively and provide better results for the students.

Conclusion

A comparison of the effectiveness of digital and traditional learning in developing countries shows that both methods have their own advantages and challenges. Digital learning offers flexibility and access to a wide array of learning resources that are not limited by geography. It allows students to learn at their own pace and fosters early technology use skills. However, the success of digital learning is often hindered by technological infrastructure constraints, such as the availability of devices and adequate internet connections, as well as the lack of training for teachers in using technology effectively in teaching and learning activities.

On the other hand, traditional learning is still the dominant choice in many developing countries because face-to-face interaction allows a stronger emotional connection between teachers and students. Face-to-face teaching can also be more easily tailored to individual student needs and can create a more conducive learning atmosphere through direct discussion and collaboration. However, this method sometimes lacks the dynamic appeal that digital learning can have, which can limit students' access to the latest information.

To optimise learning outcomes, many developing countries are adopting a hybrid approach that combines the advantages of both. By improving digital infrastructure and providing training for teachers, developing countries can improve the quality of education and prepare students for future challenges. Support from governments, educational institutions and communities is needed to deliver sustainable and inclusive solutions that respect local conditions while accommodating evolving needs.

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