

## TECHNOLOGICAL INNOVATION AND EDUCATION PORTALS AS TEACHING AND LEARNING EFFECTIVENESS STRATEGIES

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### **Abstract**

*This research aims to analyze the role of technological innovation and educational portals as strategies in increasing the effectiveness of teaching and learning in the digital era. The development of information technology has changed the paradigm of education, from a conventional system based on a face-to-face to a more flexible and inclusive digital learning. The education portal is one of the innovations that provides broad access to learning materials, discussion forums, and online evaluations to support a more interactive learning process. The research method used is descriptive qualitative with a literature review approach. Data was obtained from scientific journals, books, and relevant research reports regarding education digitalization, learning portals, and effectiveness. The analysis was carried out thematically to identify the contributions, opportunities, and challenges of implementing the education portal in supporting the teaching and learning process. The study results show that education portals contribute positively to the effectiveness of learning in terms of improving material understanding, learning motivation, and interaction between teachers and students. However, the implementation of education portals still faces obstacles, including limited infrastructure, digital literacy gaps, and the readiness of educators to adopt new technologies. This study concludes that technological innovation through education portals is not just a tool, but an educational transformation strategy that has the potential to improve the quality of learning sustainably. For this reason, policy support, infrastructure, and strengthening the capacity of human resources are needed so that the implementation of education portals can run optimally and evenly.*

**Keywords:** technological innovation, education portal, learning effectiveness, education digitalization.

### **Introduction**

The development of digital technology has brought significant changes in various aspects of life, including the Education sector (Norliani et al., 2024). Digital transformation encourages the creation of learning methods that are more interactive, flexible, and

accessible to all levels of society. Technological innovation is one of the essential strategies in answering the challenges of 21st-century education, especially in increasing the effectiveness of the teaching and learning process (Asmawi et al., 2019). Education portals, as a tangible manifestation of digitalization, play an important role in providing integrated, systematic, and adaptable solutions to the needs of students and teachers. With this portal, access to learning materials, online discussions, and evaluations can be done more practically (Ministry of Education and Culture, 2020).

The challenges faced by the world of education, especially after the pandemic, show that the conventional system is no longer enough. Technology-based breakthroughs are needed to maintain the quality of education. Education portals are one of the innovations that can provide solutions by utilizing internet connectivity widely. The effectiveness of teaching and learning is determined by how technology can bridge the gap between teachers, students, and teaching materials. The role of technology is not only as an auxiliary medium, but also as an instrument that forms a new and more collaborative learning culture. (Nuryana, 2019).

Therefore, this study aims to review how technological innovation and educational portals can be effective strategies in supporting the success of the learning process. This article was prepared using a literature review approach and descriptive qualitative research methods. Information and communication technology development has had a significant impact on almost all aspects of human life, including education. The world of education today must adapt to technological developments so that the learning process can occur more effectively, efficiently, and in accordance with the needs of the times. Educational technology innovation is an increasingly important strategy to answer these challenges, especially in improving the quality of the teaching and learning process. (Syamsuar & Reflianto, 2019).

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The post-COVID-19 pandemic conditions emphasize the urgency of using technology in education. Previously considered an alternative, the online learning system has become part of modern educational practices. (STATISTICS of the Ministry of Education and Culture, 2021). This requires educational institutions, teachers, and students to be more ready to adopt technological innovations so that the learning process continues optimally despite physical limitations. However, the implementation of education portals also faces several challenges, such as internet access gaps, low digital literacy, and some educators' resistance to new technologies. These challenges need to be overcome so that education portals can make a maximum contribution to learning effectiveness. (Armai Arief, 2000).

Based on this background, this article was compiled to review the role of technological innovation and educational portals in increasing teaching and learning effectiveness. Using a literature review approach, this study is expected to provide a comprehensive understanding of the contributions, opportunities, and challenges of implementing education portals in the current digital era. (Drafting Team of the Directorate of Elementary Schools, 2021).

### **Literature Review**

Several studies have stated that technological innovations in education include using Learning Management Systems (LMS), e-learning, and using Artificial Intelligence (AI) for learning personalization. According to Bates (2019), the digitalization of education allows the creation of flexible learning that can be accessed at any time.

Education portals are a form of technology that integrates various learning features. Yusuf & Widyaningsih (2021) state that education portals present teaching materials, discussion forums, online assessments, and repositories of learning resources.

The theory of learning effectiveness emphasizes that good learning must increase students' understanding, skills, and motivation (Slavin, 2018). In the digital context, this effectiveness can be achieved if technology can reduce access barriers and increase interaction between teachers and students.

Previous research has also emphasized the importance of teacher and student readiness in adopting educational technology. For example, research by Gunawan (2020) shows that the success of education portals is influenced by digital literacy and infrastructure support.

The literature concludes that technological innovation, including educational portals, is a strategic factor in realizing an effective, inclusive, and sustainable learning process.

### **Research Methods**

This study uses a qualitative method with a descriptive approach. The goal is to explore an in-depth understanding of the role of technological innovation and educational

portals in supporting the effectiveness of teaching and learning. Data was obtained through literature studies from scientific journals, books, and research reports on education digitalization, learning portals, and learning effectiveness. The data collection technique is carried out by documentation and systematic literature review, which involves selecting, classifying, and analyzing relevant literature. The data analysis uses thematic analysis techniques, namely identifying key themes such as technology's role and portals' effectiveness and supporting and inhibiting factors for implementation. The validity of the data is maintained through triangulation of sources by comparing findings from several credible academic sources.

## **Results and Discussion**

The results of the study show that technological innovation through education portals has a positive influence on the effectiveness of teaching and learning. The education portal provides wide access to learning materials so students can learn independently. Education portals have also been proven to increase interaction between teachers and students. Discussion features, forums, and online assessments allow for more intensive two-way communication. This strengthens the concept of collaborative learning. (Saufi & Rizka, 2021).

However, the implementation of education portals still faces challenges such as limited infrastructure, low digital literacy, and the resistance of some educators to change. These factors must be considered so that the portal's effectiveness is not hampered. Regarding effectiveness, education portals can improve student learning outcomes, both from cognitive and affective aspects. Some studies have found that learning motivation increases when students actively engage through digital media. Overall, technological innovation and education portals can be seen as a long-term strategy to improve the quality of education, as long as policies, infrastructure, and the readiness of human resources support it (Suripto et al., 2023).

The results of the literature review show that education portals, as a form of technological innovation, can increase the effectiveness of learning by providing wider, flexible, and structured access to materials. Students can access various learning resources anytime and anywhere, so learning is no longer limited to physical classrooms. This is in line with the demands of 21st-century learning that emphasizes flexibility and independence of learning. Educational portals also function as an effective means of interaction between teachers and students. Features like discussion forums, online chat rooms, and digital scoring systems allow for more intensive two-way communication. Thus, student involvement in the learning process can be increased, which has an impact on strengthening motivation and understanding of the teaching material. (Indra Arif Maulana Saufi & M. A. Rizka, 2022).

In addition to providing benefits, implementing education portals faces several obstacles, especially in infrastructure and digital literacy. Limited internet access in certain areas is a significant obstacle to even implementing education portals. In addition, some

educators are not ready to adapt to new technology, so the portal's effectiveness cannot be utilized optimally. Literature findings also show that educational portals improve student learning outcomes, both from cognitive and affective aspects. Students actively using portals tend to understand the material better and show a positive attitude towards the learning process. The affective aspect of increasing learning motivation is also an important impact of using this technology (Norliani et al., 2024).

From the institutional side, using education portals supports the effectiveness of learning management. It is easier for teachers to monitor student development, prepare evaluations digitally, and document the learning process. This portal can be an educational database for schools or colleges that helps in strategic decision-making. Overall, the discussion results emphasized that technological innovation and education portals are not just tools, but long-term educational transformation strategies. With policy support, human resource readiness, and equitable access to technology, education portals can be the main instrument in realizing more effective, inclusive, and sustainable learning.

## **Conclusion**

Technological innovation, primarily through educational portals, has proven to be an effective strategy in improving the quality and effectiveness of the teaching and learning process. The portal provides access to learning and encourages better interaction between teachers and learners. However, the success of the implementation of the education portal is highly dependent on infrastructure readiness, digital literacy, and policy support from educational institutions and the government. Therefore, synergy between stakeholders is needed to ensure that technological innovation can function optimally to support the transformation of education towards a more effective and sustainable direction.

Technological innovations, primarily through educational portals, have proven to make a significant contribution to increasing the effectiveness of the teaching and learning process. Education portals provide flexible access to learning materials and strengthen teacher-student interaction through various digital features. This shows that technology can be an important strategy in creating more interactive, collaborative, and meaningful learning. However, the success of implementing the education portal is still influenced by various supporting and inhibiting factors. Limited infrastructure, low digital literacy, and educators' readiness must be overcome so technology can be used optimally. Without a solution to these obstacles, the effectiveness of education portals is challenging to realize evenly at all levels of education.

Therefore, joint efforts are needed from the government, educational institutions, teaching staff, and the community to support the use of educational technology. Appropriate policy support, strengthening the capacity of human resources, and equitable access to technology are the keys to success. Thus, education portals can function as a learning tool and a strategy for transforming education towards a more effective, inclusive, and sustainable direction.

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