

## The Effect of Digital Learning Media on Students Academic Achievement in Secondary Schools

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**Abstract:** The rapid development of digital technology has significantly transformed the education system, particularly in secondary schools. Digital learning media such as e-learning platforms, video-based instruction, and online classroom applications have become essential tools in supporting teaching and learning processes. This study aims to analyze the effect of digital learning media on students' academic achievement in secondary schools. The method used is a literature review by examining various relevant previous studies on digital learning media and student learning outcomes. The findings indicate that digital learning media have a positive effect on students' academic achievement. This improvement is influenced by increased student motivation, easier access to learning materials, and more interactive learning experiences. However, the effectiveness of digital learning media depends on several factors, including internet accessibility, teachers' digital competence, and the availability of technological infrastructure. In conclusion, digital learning media contribute significantly to improving students' academic achievement when implemented effectively and supported by adequate learning environments.

### Introduction

The development of digital technology in the era of the Fourth Industrial Revolution has brought major changes across various sectors, including education. The learning process, which was previously conventional, has now begun to shift toward digital-based systems by utilizing various learning media such as e-learning, interactive videos, and online learning platforms. This transformation aims to improve learning effectiveness and align with the needs of 21st-century learners (Su'uga et al., 2020).

Digital learning media provides convenience for students in accessing learning materials anytime and anywhere. This is in line with the findings of Amalia et al. (2020), which state that the use of e-learning as a learning medium can improve the quality of the learning process because materials can be presented in a more flexible and systematic way. Thus, digital media plays an

important role in supporting a more effective learning process.

In addition, the use of digital learning media has also been proven to increase students' motivation and engagement in learning. Rahayu and Pahlevi (2021) found that the use of Google Meet as an online learning medium can increase student participation in teaching and learning activities. This shows that interactivity in digital learning is one of the important factors in improving students' learning outcomes.

From the perspective of learning outcomes, various studies show that digital learning media has a positive effect on students' academic achievement. Wigati et al. (2023) stated in their research that e-learning significantly contributes to improving students' mathematics learning outcomes. This is due to the more attractive presentation of materials and the ease of understanding abstract concepts through visual and interactive media.

However, the implementation of digital learning media still faces several challenges, such as limited internet access, lack of digital literacy among teachers and students, and inadequate educational infrastructure. Sintawana et al. (2020) emphasize that the success of digital-based learning highly depends on the readiness of technology and human resources in the educational environment. Therefore, efforts are needed to improve teacher competence and equalize technological facilities to support optimal digital learning implementation.

## **Research**

This study employed a qualitative approach using a library research method (literature review). This method was chosen because the research focuses on collecting and analyzing data from various relevant literature sources, such as scientific journal articles, proceedings, and previous studies discussing the effect of digital learning media on students' academic achievement in secondary schools.

The data sources in this study were obtained from various national and international journals discussing the use of digital learning media such as e-learning, Google Classroom, Google Meet, video-based learning, and other online learning platforms. The articles were selected based on topic relevance, research recency, and source credibility. This is in line with Huda et al. (2023), who stated that literature review studies can be used to analyze trends and the influence of variables based on previous research findings.

The data collection technique used was documentation, which involves collecting, reading, taking notes, and classifying information from various literature sources related to the research topic. The collected data were then categorized into themes, including types of digital learning media, their effects on learning outcomes, and supporting and inhibiting factors in their implementation.

Data analysis was conducted using content analysis techniques, which involve examining, comparing, and drawing conclusions from previous research findings. This process aims to identify general patterns regarding the influence of digital learning media on students' academic achievement. According to Amalia et al. (2020), content analysis in literature research allows researchers to develop comprehensive conclusions based on multiple existing studies.

Thus, this literature review method is expected to provide a clear and in-depth understanding of the effectiveness of digital learning media in improving students' academic achievement in secondary schools.

## **Research Results**

The results of the literature review indicate that digital learning media has a generally positive effect on students' academic achievement in secondary schools. Most of the reviewed studies consistently report an improvement in learning outcomes when digital tools such as e-learning platforms, interactive videos, and online classroom applications are integrated into teaching and learning processes (Pratama et al., 2022).

Several studies show that students who learn using digital media demonstrate higher levels of engagement and understanding compared to those who use conventional learning methods. For instance, Lestari and Wibowo (2021) found that the use of interactive learning videos significantly improves students' comprehension of abstract concepts, particularly in science and mathematics subjects.

In addition, digital learning media enhances students' motivation to learn. Kurniawan et al. (2024) reported that the flexibility and accessibility of online learning platforms encourage students to study independently outside classroom hours. This increased autonomy contributes positively to academic achievement.

Another important finding is that the use of digital platforms such as learning management systems (LMS) improves communication between teachers and students. Saputra (2023) emphasized that features such as assignment submission, discussion forums, and instant feedback in digital platforms support continuous learning and better academic performance.

However, the results also highlight several challenges. Dewi (2022) noted that unequal access to digital infrastructure, especially in rural areas, limits the effectiveness of digital learning implementation. Similarly, Firmansyah et al. (2020) stated that differences in digital literacy among teachers and students can affect the optimal use of learning technologies.

Despite these challenges, the overall findings confirm that digital learning media plays a significant role in improving students' academic outcomes when supported by adequate infrastructure and digital competence. Nugroho et al. (2021) concluded that the integration of digital media in education creates a more interactive, efficient, and student-centered learning environment.

## **Discussion**

The discussion The findings of this study indicate that digital learning media has a significant positive influence on students' academic achievement in secondary schools. This result is consistent with the idea that technology-based learning environments enhance the quality of instruction by making learning more interactive, flexible, and student-centered (Hendrawan et al., 2023).

First, digital learning media improves student engagement and participation in the learning process. When students are exposed to multimedia content such as videos, animations, and interactive quizzes, they tend to show higher interest and concentration. Sari and Maulana

(2022) stated that multimedia-based learning environments stimulate cognitive processing, which leads to better understanding and retention of material.

Second, the use of digital platforms supports independent learning. Students can access materials anytime and repeat lessons according to their learning pace. This flexibility encourages self-regulated learning, which is an important factor in academic success. According to Yuliana (2024), students who frequently use online learning platforms demonstrate stronger learning autonomy and responsibility.

Furthermore, digital learning media enhances teacher–student communication. Platforms such as learning management systems (LMS) allow teachers to provide instant feedback, distribute assignments efficiently, and facilitate online discussions. This continuous interaction contributes to better academic performance, as explained by Rahman and Fitriani (2021), who found that effective communication in digital classrooms improves student learning outcomes significantly.

However, the effectiveness of digital learning media is still influenced by several limitations. One of the major challenges is the unequal distribution of digital infrastructure, particularly in remote areas. Hidayat et al. (2020) emphasized that limited internet access can reduce the effectiveness of online learning implementation. In addition, differences in digital literacy between teachers and students may hinder optimal use of educational technology.

Despite these challenges, the overall findings confirm that digital learning media plays a crucial role in improving educational quality. When supported by adequate infrastructure and proper digital competence, it can create a more effective and engaging learning environment that ultimately enhances students' academic achievement (Prasetyo & Laksmi, 2022).

## **Conclusion**

Based on the findings and discussion from the literature review, it can be concluded that digital learning media has a positive and significant effect on students' academic achievement in secondary schools. The integration of digital tools such as e-learning platforms, interactive videos, and learning management systems enhances students' engagement, motivation, and understanding of learning materials.

Digital learning media also supports independent learning by allowing students to access materials anytime and learn at their own pace. In addition, it improves communication between teachers and students through more efficient feedback and interaction systems. These factors collectively contribute to better learning outcomes.

However, the effectiveness of digital learning media is influenced by several challenges,

including limited internet access, unequal technological infrastructure, and varying levels of digital literacy among teachers and students. These obstacles may reduce the optimal implementation of digital learning in some educational settings.

Therefore, it is essential for schools and educational stakeholders to improve digital infrastructure and enhance teachers' and students' digital competencies. With proper support, digital learning media can become a powerful tool to improve the quality of education and students' academic performance in secondary schools.

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