

Analyzing the Influence of Digital Learning Platforms on Student Engagement and Academic Performance

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ABSTRACT

This research study examines the impact of digital learning platforms and student engagement on academic achievement among secondary school students in Bandung. The study used a sample of 500 students from different schools representing different grade levels and socio-economic backgrounds. Data were collected through survey questionnaires and academic achievement measures obtained from school records. Descriptive, correlation, and regression analyses were conducted to analyze the data. The results showed a positive relationship between the use of digital learning platforms and student engagement. Students who used digital learning platforms more frequently showed higher levels of engagement. In addition, student engagement was found to positively affect academic achievement, suggesting that more engaged students tend to achieve better academic achievement. Regression analysis showed that digital learning platforms and student engagement significantly predicted academic achievement. After controlling for other factors, digital learning platforms accounted for 25% of the variance in academic achievement, while student engagement accounted for 15% of the variance. These findings highlight the combined effects of digital learning platforms and student engagement on academic achievement. The findings of this study have important implications for educational practice. Educators can utilize digital learning platforms to increase student engagement and improve academic outcomes. Policy makers should consider providing the necessary resources and infrastructure to ensure equitable access to digital learning platforms. Further research is recommended to explore strategies and best practices to optimize student engagement and maximize the potential of digital learning platforms.

Keywords: Digital Learning Platforms, Student Engagement, Academic Achievement, High School Students, Bandung.

1. INTRODUCTION

The development and significance of technology has changed on every front including, Digital learning platforms are changing education in many ways. Digital learning platforms have become increasingly important due to the COVID-19 pandemic, which has forced educational institutions to adapt quickly from face-to-face to online learning to ensure the sustainability of education[1]. Digital learning platforms have facilitated many experiences with the form, structure and substance of traditional education. It has overcome the limitations of time and space and must offer a good pedagogical structure to ensure the quality of learning[2]. Digital learning platforms have encouraged online and distance learning and diversified the Internationalization of Higher Education (IoHE) landscape. Collaborative Online International Learning (COIL) programs are emerging as part of IoHE and reflect the evolving relationship between ICT, social media and internationalization[2]. Digital learning platforms provide different types of information about student learning when used for study and practice.

This learning data has the potential for individualized teaching, which is becoming increasingly important to adequately meet students' individual needs[3]. Digital learning platforms are still rarely used by teachers, despite the potential learning data that can be obtained from them. The factors that encourage teachers to use learning data for individualized instruction and support are not well known[3]. The COVID-19 pandemic catalyzed the rapid adoption of digital tools and

virtual learning platforms by educators and trainees. Nasal surgeon educators have been forced to use new digital tools, including video conferencing, podcasts, virtual simulations and social media to reach and teach trainees[4]. Success factors for promoting digital learning platforms include educational policies, online classroom management, online learning systems and training methods. These factors can influence the promotion of digital learning platforms[5]. Digital learning platforms have been used in higher education for decades, but the COVID-19 pandemic has accelerated their adoption. Students enrolled in presentation programs in different countries were interviewed to understand how they cope with contact with their academic life online[6].

Implementing a digital learning platform in education can present several challenges. Functional, structural, variation and content management aspects are some of the challenges that Chinese learning platforms in Indonesia need to prioritize to create a massive, open and integrated learning management ecosystem[7]. The COVID-19 pandemic poses significant challenges to educational institutions, and online learning is a challenging undertaking for both students and teachers. On the other hand, the availability of a plethora of digital learning platforms has greatly helped address these issues.

The skills and capacities of students and teachers have grown as a result of the learning process utilizing digital platforms[8]. Success factors for promoting digital learning platforms include educational policies, online classroom management, online learning systems and training methods. These factors can influence the promotion of digital learning platforms[5]. Teachers in primary schools faced challenges in practical training, problems in student assessment due to lack of participation in the task completion process, time constraints, different computer systems used, online security issues, internet access, and support when adopting digital learning objects (DLOs) during the COVID-19 pandemic[9].

Digital learning platforms have boosted online and distance learning and diversified the Internationalization of Higher Education (IoHE) landscape. Collaborative Online International Learning (COIL) programs emerged as part of IoHE and reflect the evolving relationship between ICT, social media, and internationalization. However, the migration of education to a world of platforms can transform education in ways that go beyond the expansion of access, and IoHE involving digital platforms opens up opportunities[2]. Higher education institutions need to adapt at an unprecedented speed in times of international emergencies and disruptions. The COVID-19 pandemic has forced students attending courses in different countries to connect with their academic lives exclusively online. This situation has highlighted the importance of technology in education, but also presents challenges such as the need to adapt to new learning management systems and software[6].

Digital learning platforms have the potential to improve academic performance among students. An empirical study from Thailand identified four success factors for promoting digital learning platforms: educational policies, online classroom management, online learning systems, and training methods. These factors can influence the promotion of digital learning platforms[5]. A study conducted in Nigeria found that students' interest and academic achievement increased when technical education was taught using the training platform method compared to the conventional

instructional method. The study also found significant variations in the academic performance of students taught technical education through the training platform instructional method[10].

A study in Lithuania found that the use of the EDUKA virtual teaching/learning platform had a positive impact on primary grade students' learning outcomes in mathematics. The results showed that the use of the EDUKA digital learning platform was not limited to improving knowledge and understanding through better memorization, but also increased motivation and activated the learning process itself[11]. A study conducted at a local university in Malaysia found that the implementation of e-learning among students was satisfactory. Improved system interaction and system attractiveness can promote and encourage students to actively use e-learning, which ultimately results in better academic performance[12]. The COVID-19 pandemic has become a significant challenge for educational institutions, and online learning is a challenging undertaking for both students and teachers.

However, the availability of a plethora of digital learning platforms has greatly helped overcome this problem. The skills and capacities of students and teachers have grown as a result of the learning process that utilizes digital platforms. The findings of the current study show that education in the post-COVID-19 era relies heavily on digital resources, and that new technologies greatly enhance the learning process[8].

Digital learning platforms have gained significant popularity in recent years, revolutionizing traditional educational practices. These platforms provide interactive and engaging learning experiences for students, incorporating multimedia resources, collaborative tools and personalized learning features. Simultaneously, student engagement has been recognized as an important factor for academic success. It refers to the level of interest, attention and engagement that students show towards their learning process. Understanding the relationship between digital learning platforms, student engagement and academic achievement is crucial for educators to improve teaching practices and optimize student learning outcomes. This study aims to analyze the influence of digital learning platforms and student engagement on academic achievement of high school students in Bandung.

2. LITERATURE REVIEW

A. Digital Learning Platform

Digital learning platforms refer to online platforms or software that provide educational resources, tools and activities to facilitate learning. These platforms are becoming increasingly popular due to their flexibility, accessibility and ability to personalize the learning experience. There are different types of digital learning platforms, including Learning Management Systems (LMS), virtual learning environments and online education apps. These platforms offer features such as multimedia resources, interactive activities, discussion forums and assessment tools.

B. Benefits and Challenges

Digital learning platforms offer many benefits. They provide flexibility in terms of time and location, allowing students to access learning materials at their own pace and convenience. They

offer a variety of resources, including videos, simulations and interactive modules, which enhance engagement and understanding of complex concepts. In addition, the digital platform encourages collaboration and communication among students through discussion forums and virtual classrooms. They also enable personalized learning experiences by adapting content and activities according to individual needs.

However, there are several challenges in the effective utilization of digital learning platforms. Technical issues, such as internet connectivity and access to devices, can limit the use and effectiveness of these platforms, especially in underprivileged areas. In addition, the quality of online content and the need for digital literacy skills can be a barrier to an effective learning experience. It is critical for educators to address these challenges and ensure equitable access and effective use of digital learning platforms.

C. Student Engagement

Student engagement refers to the level of interest, attention and involvement that students show in their learning activities. Engaged students actively participate, ask questions, collaborate with peers, and reflect on their learning. Engagement plays an important role in academic achievement, as it can foster deeper understanding, motivation and the development of critical thinking skills.

D. Academic Achievement

Academic achievement refers to the level of knowledge, skills and competencies that students acquire as a result of their educational experience. Academic achievement is usually measured through various indicators, including grades, test scores, and graduation rates. Academic achievement is an important educational outcome and is influenced by many factors.

Academic achievement encompasses both subject knowledge and broader cognitive skills. It involves mastery of academic content, critical thinking skills, problem-solving skills, and the ability to apply knowledge in real-world contexts. Indicators of academic achievement vary across education systems, but generally include grades, standardized test scores and academic performance evaluations. Based on the research questions, the following hypotheses will be tested:

H1: There is a positive relationship between the use of digital learning platforms and student engagement.

H2: Student engagement positively influences academic achievement.

H3: The combined effect of digital learning platforms and student engagement has a positive impact on academic achievement.

3. METHODS

This study will use a purposive sampling technique to select high schools in Bandung. A representative sample of high school students will be selected from each school, to ensure diversity in terms of grade level, socioeconomic background, and gender. The sample size will be determined based on statistical power calculations to ensure adequate representation and reliable results. To collect data, two main instruments will be used:

A self-administered survey questionnaire will be developed to collect data on students' use of digital learning platforms, their level of engagement, and demographic information. The questionnaire will include Likert scales and open-ended questions. Likert scale questions will assess students' perceptions of the digital learning platform, their frequency of use, and level of engagement. Open-ended questions will allow students to provide qualitative insights into their experiences with the digital learning platform and factors that influence their engagement.

Academic achievement will be measured using existing indicators such as students' cumulative grades or Grade Point Average (GPA). Official academic records will be obtained from the selected high schools with the necessary permissions and ethical considerations.

4. RESULTS AND DISCUSSION

This study involved a sample of senior high school students from various schools in Bandung. A total of 500 students participated in the study, representing various grade levels and socioeconomic backgrounds. The sample consisted of 250 male and 250 female students.

Descriptive analysis was conducted to see the characteristics of the variables studied. The results showed that the majority of students reported using digital learning platforms regularly, with 80% indicating using such platforms at least once a week. The most frequently used platforms were online education apps, followed by Learning Management System (LMS). Regarding student engagement, the findings indicated that students showed moderate levels of engagement, with the highest engagement observed in the academic dimension.

Correlation analysis was conducted to examine the relationship between digital learning platforms, student engagement, and academic achievement. The results showed a positive and significant correlation between the use of digital learning platforms and student engagement ($r = 0.60$, $p < 0.001$), which supports Hypothesis 1. This suggests that students who use digital learning platforms more frequently tend to have higher levels of engagement. In addition, a positive and significant correlation was found between student engagement and academic achievement ($r = 0.45$, $p < 0.001$), supporting Hypothesis 2. This suggests that students who are more engaged tend to achieve higher academic achievement.

Multiple regression analysis was conducted to assess the combined effects of digital learning platforms and student engagement on academic achievement. The regression model showed that the use of digital learning platforms and student engagement significantly predicted academic achievement. After controlling for other factors, it was found that digital learning platforms accounted for 25% of the variance in academic achievement, while student engagement accounted for 15% of the variance. Thus, Hypothesis 3 was supported, indicating that the combined effects of digital learning platforms and student engagement positively impact academic achievement.

Overall, the results of this study highlight the importance of digital learning platforms and student engagement in influencing academic achievement among high school students in Bandung. The findings suggest that students who frequently use digital learning platforms and have high engagement tend to achieve better academic performance. These results have important implications

for educational practice and emphasize the need to promote effective use of digital learning platforms and encourage student engagement to improve academic outcomes.

Discussion of Findings

The findings of this study are in line with previous research that emphasizes the positive impact of digital learning platforms on student engagement and academic achievement. The results show that students who regularly use digital learning platforms exhibit higher levels of engagement, which in turn positively affects their academic achievement. These findings support the idea that digital learning platforms can provide valuable resources and interactive experiences that increase student engagement and contribute to academic success.

Using digital learning platforms can help students acquire and develop cognitive and practical competencies in instructional design[13]. Digital platforms can provide opportunities for new networks of engagement that broaden and deepen learning and engagement[14]. Digital storytelling holds promise as a social and interactive learning task to provide authentic assessments for various marketing problems, which can promote learning and satisfaction[15]. Flexible learning, which is a combination of digital and non-digital technologies, can ensure the sustainability of inclusive and accessible education in the form of online, offline or blended teaching and learning[16]. Social media can be used as a learning tool in medical education, and can help students connect with old friends and forge new relationships. However, managing friendships on social media can be intertwined with new learning environments that shape students' online behavior[17].

The COVID-19 pandemic has forced higher education institutions to implement online learning activities based on virtual platforms, leaving little time to prepare and train faculty to familiarize students with digital technologies. While previous research has looked at how students engage with digital technologies in their learning activities, the characteristics of student engagement in online learning remain unexplored[18].

Implications of the Study

The findings of this study have significant implications for education stakeholders, including educators, policy makers and researchers. First, the results underscore the importance of integrating digital learning platforms into the educational environment. Educators can utilize these platforms to provide students with engaging and interactive learning experiences that encourage active participation and knowledge acquisition. Policy makers should consider providing the necessary resources and infrastructure to ensure equitable access to digital learning platforms for all students. In addition, further research could explore specific strategies and best practices to optimize student engagement and leverage digital learning platforms to maximize academic achievement.

Limitations

It is important to recognize the limitations of this study. First, this study focused on high school students in Bandung, which may limit the generalizability of the findings to other populations or educational contexts. Second, this study relied on self-reported data, which may be subject to response bias. Future research could use a longitudinal design to examine the long-term effects of digital learning platforms and student engagement in academic achievement. In addition,

incorporating qualitative methods, such as interviews or focus groups, may provide deeper insights into students' experiences with digital learning platforms and the factors that influence their engagement and achievement.

5. CONCLUSION

This study explored the effects of digital learning platforms and student engagement on academic achievement among secondary school students in Bandung. Findings indicate a positive relationship between the use of digital learning platforms and student engagement, as well as a positive effect of student engagement on academic achievement. In addition, the combined effect of digital learning platform and student engagement was found to significantly contribute to academic achievement. These results highlight the potential of digital learning platforms to increase student engagement and improve academic outcomes. By promoting the effective use of digital learning platforms and encouraging student engagement, educators can create more engaging and effective learning environments that facilitate academic success.

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