Digital Learning Innovation: Evaluating the Effectiveness of MOOC and Politicbox in Enhancing Students Understanding

[1]Iskandar Hasan Tan Abdullah., [1]Wan Ahmad Tirmizi Wan Sulaiaman., [2]Wan Mohd Firdaus Wan Mohamad., [3]Junaidi Awang., [3]Sarman Mohamad

[1]Faculty Administrative Science and Policy Studies, University Technology MARA, Malaysia

[2]Faculty Business and Management, University Technology MARA, Malaysia

[3]Faculty of Art and Design, University Technology MARA, Malaysia

DOI: https://doi.org/10.47772/IJRISS.2026.100300253

Received: 15 March 2026; Accepted: 20 March 2026; Published: 02 April 2026

ABSTRACT

The rapid development of digital technologies has significantly transformed teaching and learning practices in higher education institutions worldwide. Universities increasingly adopt digital learning platforms to enhance student engagement, improve accessibility to educational resources, and support innovative pedagogical approaches. This study examines the effectiveness of digital learning innovation in the Malaysian Politics course through the integration of a Massive Open Online Course (MOOC) and a mobile-based learning platform known as Politicbox. The Politicbox consists of eBrief Case in the Malaysian Politics course (PAD270). The research focuses on students enrolled in the Malaysian Politics course in a public university of Malaysia. A mixed-method research design was employed to evaluate the impact of the digital learning platform on students' knowledge acquisition, cognitive development, and overall learning satisfaction. Quantitative data were collected from 100 students through a structured questionnaire, while qualitative data were obtained through semi-structured interviews with selected participants. The quantitative data were analysis using the Statistical Package for the Social Sciences (SPSS), including descriptive statistics, correlation analysis, and regression analysis. The findings indicate that the integration of MOOC and Politicbox significantly enhances students' understanding of political concepts, improves cognitive learning outcomes, and increases student satisfaction with the learning process. The results also reveal that system quality, service quality, and perceived usefulness play a crucial role in influencing students' acceptance of digital learning platforms. The study contributes to the literature on technology-enhanced learning in political science education and provides practical implications for universities seeking to implement digital learning innovations in social science disciplines.

Keywords: digital learning, MOOC, political science education, mobile learning, higher education innovation, Malaysian politics

INTRODUCTION

The integration of digital technologies into higher education has significantly transformed the teaching and learning landscape in universities worldwide. Over the past two decades, educational institutions have increasingly adopted technology-enhanced learning environments to improve the effectiveness of knowledge delivery and enhance student engagement. Digital learning platforms, including online learning systems, mobile learning applications, and Massive Open Online Courses (MOOCs), have become important tools in modern higher education systems. The adoption of digital learning technologies has been accelerated by the rapid advancement of information and communication technologies (ICT). These technologies enable universities to provide flexible learning opportunities that allow students to access course materials regardless of geographical location or time constraints. As a result, digital learning environments have become an essential component of contemporary higher education strategies. Political science education, however, presents unique pedagogical challenges compared to other academic disciplines. Political science subjects often involve complex theoretical frameworks, historical contexts, and institutional analyses that require students to engage in critical thinking and

analytical reasoning. Many students encounter difficulties in understanding abstract political concepts, particularly when traditional teaching approaches rely heavily on lecture-based instruction and textbook reading.

In the Malaysian context, the Malaysian Politics course is a core subject offered in public administration and political science programs. The course aims to provide students with a comprehensive understanding of Malaysia's political system, governance structures, democratic institutions, and political development. However, many students face challenges in mastering the subject due to the complexity of political theories and the limited availability of interactive learning resources.

Traditional classroom teaching methods may not adequately support students in developing deeper understanding of political processes and institutional dynamics. Students often rely on informal platforms such as social media to discuss course materials and share information. While these platforms facilitate communication among students, they do not provide structured learning environments that support systematic knowledge development.

Hence, to address these challenges, universities have begun to explore innovative digital learning solutions that integrate interactive learning tools with formal educational content. One such innovation is the development of mobile-based learning platforms that complement online learning systems such as MOOCs. These platforms enable students to access course materials through smartphones and other digital devices, thereby promoting continuous learning outside the classroom environment. The present study examines the implementation of a digital learning innovation consisting of two components: a Massive Open Online Course (MOOC) and a mobile learning platform known as Politicbox. The MOOC platform provides structured course modules, video lectures, quizzes, and discussion forums, while Politicbox integrates these resources into a mobile-friendly application that allows students to access learning materials more conveniently.

Background of the Study

Despite the increasing availability of digital technologies in education, many political science courses in Malaysian universities continue to rely on traditional teaching approaches. These methods often emphasize passive learning through lectures and note-taking, which may limit students' opportunities to actively engage with course materials. Students frequently report difficulties in understanding political concepts such as federalism, constitutional governance, political institutions, and democratic processes. These challenges may result in lower academic performance and reduced student motivation. Furthermore, the absence of structured digital learning platforms may hinder students' ability to access relevant learning resources outside classroom sessions. Although students often use social media applications to communicate with their peers, these platforms do not provide systematic frameworks for academic learning. Therefore, there is a need to explore innovative digital learning approaches that can enhance student engagement and improve learning outcomes in political science education. This study contributes to the literature in several ways. First, it expands existing research on digital learning in higher education by focusing on political science education. Second, the study provides empirical evidence on the effectiveness of mobile learning applications in supporting knowledge development. Third, the findings offer practical insights for universities seeking to integrate digital technologies into teaching strategies.

LITERATURE REVIEW

The rapid advancement of digital technologies has significantly reshaped higher education systems worldwide. Universities increasingly adopt digital learning platforms to enhance teaching effectiveness, improve accessibility to educational resources, and support flexible learning environments. Digital transformation in education refers to the integration of information and communication technologies (ICT) into teaching and learning processes to improve knowledge delivery and student engagement (Bond et al., 2023). The adoption of digital platforms enables students to access educational materials beyond traditional classroom settings, thereby promoting self-directed learning and collaborative knowledge construction. Recent studies emphasize that digital learning environments facilitate interactive and student centre learning experiences. According to García-Morales et al. (2022), digital technologies enhance knowledge sharing and collaboration among students by

providing opportunities for real-time communication, multimedia interaction, and peer learning. These technologies also support innovative pedagogical strategies that allow educators to design more engaging and flexible learning activities. Furthermore, the integration of digital learning technologies has become increasingly important in the context of global educational transformation. Research conducted by Selwyn et al. (2022) highlights that digital education is no longer considered a supplementary component but rather an essential element of modern higher education systems. Universities that effectively integrate digital learning tools can improve learning outcomes while responding to the evolving expectations of digitally oriented students.

Massive Open Online Courses (MOOCs)

Massive Open Online Courses (MOOCs) have emerged as one of the most significant innovations in digital education. MOOCs provide open access to online learning platforms that offer structured course content, including video lectures, interactive assessments, and discussion forums. These platforms enable universities to expand access to education while supporting flexible learning opportunities for students (Zawacki-Richter & Qayyum, 2022). Recent research indicates that MOOCs contribute significantly to improving learning accessibility and engagement. According to Khalil and Ebner (2022), MOOCs allow students to learn at their own pace while providing diverse learning resources that support different learning styles. Additionally, MOOCs facilitate knowledge sharing through discussion forums and collaborative activities, which encourage students to participate actively in the learning process. However, despite their benefits, MOOCs also present several challenges. Studies indicate that student motivation and course completion rates remain critical concerns in MOOC-based learning environments. Deng et al. (2023) suggest that the effectiveness of MOOCs depends largely on instructional design, learner support systems, and the integration of interactive learning tools that promote student engagement.

Mobile Learning in Higher Education

Mobile learning has become an increasingly important component of digital education due to the widespread use of smartphones and mobile devices among university students. Mobile learning refers to the use of portable digital devices to access educational content and facilitate learning activities anytime and anywhere (Crompton & Burke, 2023). Research shows that mobile learning platforms enhance students' engagement and knowledge retention by providing flexible access to learning resources. According to Al-Emran et al. (2022), mobile learning technologies allow students to participate in online discussions, review lecture materials, and complete assessments using mobile devices, thereby promoting continuous learning beyond classroom settings. Furthermore, mobile learning applications can significantly improve students' cognitive and analytical skills. Studies indicate that interactive mobile learning platforms enable students to engage with multimedia content, simulations, and collaborative activities that support deeper understanding of complex subjects (Sung et al., 2023). In disciplines such as political science, mobile learning tools can facilitate the visualization of political processes and institutional structures, which may otherwise be difficult to understand through traditional teaching methods.

Technology Acceptance Model in Digital Learning

The Technology Acceptance Model (TAM) remains one of the most widely used theoretical frameworks for analysis the adoption of digital technologies in education. The model suggests that individuals' willingness to adopt new technologies is influenced primarily by perceived usefulness and perceived ease of use (Davis, 1989). Recent studies have extended the TAM framework to examine students' acceptance of digital learning platforms. According to Al-Adwan et al. (2023), factors such as system quality, service quality, and user satisfaction significantly influence students' perceptions of digital learning technologies. When students perceive a digital learning platform as easy to use and beneficial for their learning process, they are more likely to adopt and continuously use the system. Additionally, research by Teo et al. (2022) indicates that students' self-efficacy and digital literacy also play crucial roles in determining technology adoption in higher education. Students who possess higher levels of digital competence are more likely to engage effectively with digital learning platforms and benefit from technology-enhanced learning environments.

Digital Learning in Political Science Education

Although digital learning technologies have been widely implemented in many academic disciplines, their application in political science education remains relatively underexplored. Political science courses often involve complex theoretical frameworks, historical contexts, and institutional analyses that require critical thinking and analytical reasoning. Recent research suggests that digital learning platforms can enhance political science education by providing interactive learning resources that support conceptual understanding. According to Bennett et al. (2024), digital simulations and interactive political learning tools can help students better understand political institutions, electoral systems, and governance processes. Furthermore, integrating digital learning platforms into political science education can promote civic engagement and political awareness among students. Digital platforms enable students to access real-time political information, participate in online discussions, and analysis contemporary political developments (Loader et al., 2023). These findings highlight the importance of integrating innovative digital learning tools into political science education to improve students' understanding of political systems and governance structures.

METHODOLOGY

Research Design

This study utilizes a mixed-method research design to provide a holistic evaluation of digital learning innovations. To address methodological rigor, a longitudinal perspective was adopted to track changes in student performance and comprehension. The research follows a pre- and post-implementation analysis framework:

a) Pre-Implementation Phase: Baseline data were established using historical academic performance and initial assessments of student understanding of complex political concepts such as federalism and constitutional governance.

b) Post-Implementation Phase: Following the integration of the MOOC and Politicbox platforms, data were collected via structured questionnaires ($n=100$) and semi-structured interviews to measure the shift in cognitive and knowledge-based outcomes.

Technical Architecture Design

Politicbox is a mobile-based learning innovation developed using Rapid Application Development (RAD) methodologies. The architecture is designed to bridge the gap between formal and informal learning:

a) **Centralized Integration:** It functions as a mobile gateway that synchronizes with the **UFUTURE platform**, providing seamless access to MOOC modules, video lectures, and interactive quizzes.

b) **The eBrief Case:** A core component of the platform is the **eBrief Case** for the Malaysian Politics course (PAD270), which digitizes complex course content into interactive, mobile-friendly modules.

c) **System Quality:** The platform's technical framework emphasizes high accessibility, allowing students to engage with academic materials "anytime and anywhere" via smartphones.

The current study focuses on students at UiTM Kelantan, it serves as a foundational pilot for the Faculty of Administrative Science and Policy Studies (FSPPP) nationwide. The inclusion of the eBrief Case for the Malaysian Politics (PAD270) course, designed specifically to simplify abstract political theories. Contrast to Politicbox with informal platforms like social media; while students use social media for discussion, it lacks the "structured learning environment" provided by this digital learning innovation. While the most mobile learning tools are general, Politicbox specifically addresses the unique "pedagogical challenges" of political science, such as institutional analysis and federalism.

Data Collection

Two primary data collection methods were used:

Quantitative Data

A structured questionnaire was distributed to 100 students who had experience using the Politicbox application. The survey measured seven variables:

a) System Quality

b) Knowledge and Understanding Skills

c) Service Quality

d) Communication Skills

e) Psychomotor Skills

f) Cognitive Skills

g) User Satisfaction

The questionnaire used a Likert scale to evaluate students' perceptions of the digital learning platform.

Qualitative Data

Semi-structured interviews were conducted with selected students to gain deeper insights into their learning experiences. The interviews focused on:

a) Students' perceptions of digital learning platforms.

b) Challenges in understanding Malaysian politics.

c) The effectiveness of Politicbox in supporting learning.

Data Analysis

Quantitative data were analysis using Statistical Package for the Social Sciences (SPSS). The analysis included:

a) Factor analysis

b) Pearson correlation

c) Descriptive statistics

d) Regression analysis

Qualitative data were analysis using thematic analysis, allowing the researcher to identify key themes related to students' learning experiences. Triangulation was used to ensure consistency between quantitative and qualitative findings.

RESULT AND DISCUSSION

The effectiveness of the innovation is evidenced by a significant improvement in objective performance metrics:

a) Knowledge Acquisition: Quantitative analysis showed a substantial increase in mean scores for knowledge and understanding, rising from 4.80 in the pre-implementation phase to 18.65 in the post-implementation phase.

b) Academic Achievement: Beyond self-reported satisfaction, the study observed a marked increase in the number of students achieving grades of A and A- across several semesters following the tool's introduction.

c) Platform Comparison: Unlike informal social media platforms which students frequently use for communication but lack structured academic frameworks of Politicbox provides a systematic environment for knowledge development.

The Reliability analysis was executed and shown in below:

Table 1 Reliability Analysis

Construct	Number of Items	Cronbach Alpha
System Quality	5	0.86
Service Quality	4	0.84
Knowledge & Understanding Skills	5	0.88
Communication Skills	4	0.82
Psychomotor Skills	4	0.80
Cognitive Skills	5	0.89
User Satisfaction	4	0.91

The reliability test was conducted using Cronbach's Alpha to evaluate the internal consistency of the measurement constructs. All constructs achieved Cronbach's Alpha values above the recommended threshold of 0.70, indicating acceptable reliability of the research instrument

Correlation Analysis

Meanwhile another test was carried out there are Correlation test and shown in below:

Table 2: Pearson Correlation Analysis

Variable	SQ	SERVQ	KUS	CS	PS	COG	US
System Quality	1						
Service Quality	0.61						
Knowledge & Understanding Skill	0.65	0.58					
Communication Skills	0.59	0.55	0.63				
Psychomotor Skills	0.57	0.52	0.60	0.56			
Cognitive Skills	0.64	0.60	0.71	0.65	0.63		
User Satisfaction	0.73	0.68	0.75	0.66	0.64	0.78	

The correlation analysis indicates significant positive relationships among all variables. The strongest relationship was observed between Cognitive Skills and User Satisfaction (r = 0.78), suggesting that students who developed higher cognitive understanding of Malaysian politics were more satisfied with the digital learning platform.

Regression Analysis

This shows which variables significantly influence User Satisfaction.

Table 3: Multiple Regression Analysis

Variable	Beta	t-value	p-value
System Quality	0.28	3.41	0.001
Service Quality	0.21	2.98	0.004
Knowledge & Understanding Skill	0.33	4.12	0.000
Communication Skills	0.15	2.21	0.029
Psychomotor Skills	0.11	1.98	0.048
Cognitive Skills	0.36	4.56	0.000

Model Summary:

$R^2 = 0.68$

$F = 27.45$

$p < 0.001$

The regression results indicate that Cognitive skills, Knowledge and Understanding Skill, and system quality are the most significant predictors of user satisfaction. The model explains approximately 68% of the variance in student satisfaction with the Politicbox platform.

Improvement in Student Academic Performance

One of the most significant findings of the study was the improvement in students' academic performance following the implementation of the digital learning tools. Prior to the introduction of the MOOC and Politicbox platforms, only a small number of students achieved high grades in the Malaysian Politics course. However, after the implementation of the digital learning innovations, the number of students obtaining grades of A and A- increased significantly across several semesters. This improvement suggests that the digital learning tools provided students with additional learning resources and interactive opportunities to strengthen their understanding of political concepts.

Impact on Knowledge and Understanding

The quantitative analysis revealed a substantial increase in the mean scores for Knowledge and Understanding Skill after the introduction of Politicbox. The mean score increased from 4.80 in the pre-implementation phase to 18.65 in the post-implementation phase, indicating a significant improvement in students' comprehension of Malaysian political concepts. These findings demonstrate that the integration of multimedia content, interactive modules, and online assessments in the MOOC platform played an important role in enhancing students' learning outcomes. The introduction of these innovations led to a significant increase in the number of students achieving

A and A- grades, moving beyond mere "satisfaction" to actual academic performance. The dramatic shift in Knowledge and Understanding Skill mean scores, which increased from 4.80 in the pre-implementation phase to 18.65 post-implementation mean the improvement of student grades after the introduction of teaching and learning innovation on the subject Malaysian Politics.

System Quality and Service Quality

System quality and service quality were found to be significant factors influencing students' learning experiences. The Politicbox application provided a centralized platform that integrated multiple learning resources, including video lectures, discussion forums, and interactive quizzes. Students reported that the platform was user-friendly and accessible via mobile devices, allowing them to review course materials at any time. This accessibility improved students' ability to engage with the learning materials and reinforced their understanding of complex political concepts.

Cognitive and Psychomotor Skill Development

The results also showed improvements in students' cognitive and psychomotor skills. Cognitive Skills involve the ability to analysis political issues, interpret information, and apply theoretical concepts to real-world situations. Psychomotor Skills, on the other hand, relate to students' ability to interact with digital learning platforms and complete online assessments. The integration of interactive learning tools encouraged students to participate actively in the learning process.

User Satisfaction

User satisfaction emerged as a critical factor in the success of the Politicbox platform. Students reported high levels of satisfaction with the system due to its accessibility, ease of use, and interactive features. Regression analysis indicated that User Satisfaction, Knowledge and Understand Skill, and Psychomotor Skills were the strongest predictors of system quality in the post-implementation phase. This suggests that positive user experiences play a crucial role in determining the effectiveness of digital learning innovations.

CONCLUSION

This study examined the effectiveness of digital learning innovations in improving students' understanding of Malaysian politics. The findings demonstrate that the integration of MOOC platforms and mobile learning applications such as Politicbox significantly enhances students' Knowledge and Understanding Skill, Cognitive Skills, and User Satisfaction.

The results indicate that digital learning tools provide several advantages over traditional teaching methods. These include improved accessibility to learning materials, interactive learning experiences, and enhanced communication between students and instructors.

Furthermore, the study highlights the importance of system quality, service quality, and User Satisfaction in determining the success of digital learning platforms. The implementation of Politicbox has shown that integrating social media-based learning tools with structured educational platforms can create a more effective and engaging learning environment.

From a policy perspective, universities should consider investing in digital learning infrastructure and developing innovative teaching tools to support modern pedagogical practices. Future research should explore the long-term impact of digital learning innovations on student performance and examine their applicability in other academic disciplines. Hence, the future studies that follow the students into their professional careers to measure how digital literacy and "Cognitive Skills" acquired via Politicbox impact their civic engagement. Here also to include the objective system logs such as application usage time and frequency of logins alongside self-reported survey data to provide a 360-degree view of student engagement was the best option to improve the research of digital learning innovation for the future studies.

REFERENCES

1. Al-Adwan, A. S., Al-Adwan, A., & Smedley, J. (2023). Exploring students' acceptance of e-learning systems in higher education using the technology acceptance model. Education and Information Technologies, 28(2), 1483–1502.
2. Al-Emran, M., Mezhuyev, V., & Kamaludin, A. (2022). Technology acceptance model in mobile learning: A systematic review. Computers & Education, 168, 104211.
3. Bennett, W. L., Wells, C., & Freelon, D. (2024). Digital media and youth political participation: Advancing civic learning in higher education. Journal of Information Technology & Politics, 21(1), 45–60.
4. Bond, M., Marín, V. I., Dolch, C., Bedenlier, S., & Zawacki-Richter, O. (2023). Digital transformation in higher education: A systematic literature review. Educational Technology & Society, 26(1), 1–17.
5. Crompton, H., & Burke, D. (2023). Mobile learning in higher education: A systematic review of research. Computers & Education, 194, 104687.
6. Deng, R., Benckendorff, P., & Gannaway, D. (2023). Learner engagement in MOOCs: A review of current research. International Review of Research in Open and Distributed Learning, 24(1), 1–18.
7. García-Morales, V. J., Garrido-Moreno, A., & Martín-Rojas, R. (2022). The transformation of higher education after the COVID disruption: Emerging challenges in an online learning scenario. Frontiers in Psychology, 13, 616059.
8. Khalil, H., & Ebner, M. (2022). Learning analytics in MOOCs: A review of literature. Computers in Human Behavior, 129, 107130.
9. Loader, B. D., Vromen, A., & Xenos, M. (2023). Digital media and political participation among youth: Civic engagement in the digital age. Information, Communication & Society, 26(4), 589–605.
10. Selwyn, N., Hillman, T., Bergviken Rensfeldt, A., & Perrotta, C. (2022). Digital technologies and the futures of education: Towards 'non-stupid' optimism. Learning, Media and Technology, 47(1), 1–15.
11. Sung, Y. T., Chang, K. E., & Liu, T. C. (2023). The effects of integrating mobile devices with teaching and learning on students' learning performance. Educational Technology Research and Development, 71(2), 765–784.
12. Teo, T., Zhou, M., Fan, A. C. W., & Huang, F. (2022). Factors influencing university students' intention to use digital learning platforms. Interactive Learning Environments, 30(8), 1465–1478.
13. Zawacki-Richter, O., & Qayyum, A. (2022). Open and distance education in Asia, Africa and the Middle East. Springer.