



THE EFFECTS OF TECHNOLOGY ACCEPTANCE, PERSONALIZED LEARNING EXPERIENCE, AND LEARNING INNOVATION ON STUDENT DIGITAL ENGAGEMENT AMONG POSTGRADUATE STUDENTS

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ABSTRACT

The current study is intended to investigate the impact of Technology Acceptance, Individualized Learning Experience and Learning Innovation on Student Digital Engagement among postgraduate students. This research used quantitative method by distributing survey to active postgraduate students in higher education institution in Indonesia who use digital technology on the learning process. The respondents were selected using the purposive sampling technique with the criteria of being an active master or doctoral student, having studied at least one semester, using a Learning Management System or digital learning platform, and having experience in participating in synchronous and asynchronous learning. The data were collected through an online questionnaire using Google Forms. The data were analyzed using multiple linear regression. The results show that Technology Acceptance, Individualized Learning Experience and Learning Innovation positively and significantly impact Student Digital Engagement. Findings indicate that students' acceptance of technology, personalized educational experiences, and innovative learning strategies are important in increasing student engagement in digital learning environments. The findings also suggest that higher education institutions should provide easy-to-use and relevant learning technologies, design personalized and flexible learning experiences, and encourage learning innovation through interactive, collaborative and technology-based methods to improve Student Digital Engagement among postgraduate students sustainably.

Keywords: Technology Acceptance; Personalized Learning Experience; Learning Innovation; Student Digital Engagement

INTRODUCTION

The digital revolution in higher education has transformed how students gain knowledge, engage with lecturers and other students, complete academic assignments and participate in other learning activities. The advent of Learning Management Systems, virtual classrooms, artificial intelligence, learning analytics,

digital libraries, collaborative platforms, video conferencing, mobile learning, and many other educational technologies has facilitated a more flexible and digital learning environment (Fuentes & LaBad, 2025). These changes became increasingly important especially at the postgraduate level where students are expected to be able to study independently, think critically, carry out research, link theory with practice and manage academic activities more independently (Afifatun, 2025; Kholil et al., 2020). In this context, the student digital engagement is a crucial element to establish the effectiveness of the learning process in postgraduate education. Student Digital Engagement is the extent to which students engage in academic activities using technology. It is measured by the participation, engagement, focus, effort, cooperation and use of different digital learning resources by students (Estede et al., 2025; Susilowati et al., 2025).

Technology Acceptance is one of the most important factors that could affect Student Digital Engagement among postgraduate students (Shang et al., 2024). Technology Acceptance is the extent to which the students are willing to accept and use the technology in their learning activities (Nuraeni et al., 2020; Solehuddin et al., 2023). This acceptability is related to the perception of advantages of technology in the academic process by the students, as well as the ease of its use (Sri et al., 2023). Students who view technology as a tool to improve the effectiveness of learning will be more likely to get excited about using it in their regular schoolwork (Senoaji et al., 2024; Jaya et al., 2017). Besides technology adoption, it is also expected that Individualized Learning Experience will be an important determinant of Student Digital Engagement of postgraduate students. Individualized Learning Experience is a learning experience that changes the material, activities, techniques, pace, feedback and learning resources to meet the unique needs, characteristics, talents and preferences of the students (Jiali et al., 2024; Laak & Aru, 2025). The personalization is more and more important in postgraduate education, because students have different academic backgrounds, professional experiences, levels of competence, demands of self-development and career ambitions (Anggraini, 2020). A one-size-fits-all approach to learning may leave some students feeling that the learning materials are too basic, too complicated, or not relevant enough to their professional settings (Rustiyana et al., 2025; Nuraeni & Nurunnisa, 2020). Learning Innovation will also be instrumental in increasing Student Digital Engagement for postgraduate students. Learning Innovation is the ability of higher education institutions and lecturers to develop and utilize new ideas, techniques, media, technology, and learning activities that are expected to improve the effectiveness and quality of students' learning experiences (Li et al., 2023). Innovation in learning is particularly critical, as the digitization of education should not just be a question of transferring traditional lectures to virtual classrooms, or digitizing printed materials. These types of techniques may lead to passive digital learning that does not significantly enhance the student learning experience. Innovation in learning has to be centered on creating more interactive, collaborative, immersive, problem-oriented and learner centered learning processes (Abidin et al., 2025; Ansori et al., 2024).

The present research project is to explore the effect of Technology Acceptance, Individualized Learning Experience and Learning Innovation on Student Digital Engagement of post-graduate students. The research is particularly important since the digital transformation of higher education requires not only the availability of technologies but also the capacity of institutions to encourage active student participation in digital learning environments. Successes in digital learning are measured not only by the number of

platforms students use or how often students access those platforms, but also by the level of student engagement, interaction, collaboration, effort and the extent to which technology is used to improve the learning process. The study is expected to contribute to the literature in the fields of educational management, digital learning, educational technology, student engagement, and learning innovation, especially in explaining the factors that shape Student Digital Engagement in postgraduate education theoretically.

METHODS

The research was quantitative in nature and used a survey technique to investigate the effect of Technology Acceptance, Individualized Learning Experience and Learning Innovation on Student Digital Engagement among postgraduate students. The population of the study was active postgraduate students at Indonesian higher education institutions that used digital technology in the learning process. The sampling method was purposive. The respondents were expected to be active master or doctoral students who had completed at least one semester of study, had used a Learning Management System (LMS) or digital learning platform in their academic activities, had experience of participating in synchronous and asynchronous learning, and had used various digital learning resources in support of their learning activities. Data were collected by google forms online. All questions in the study instrument were scored on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree".

The Technology Acceptance construct was measured through the following dimensions: perceived utility, perceived ease of use, attitude toward the use of technology, behavioral intention to utilize technology and actual use of technology. The variables used to evaluate the tailored Learning Experience were: adapted educational content, customized learning paths, customized feedback, learning flexibility, and learning preference matching. The learning innovation was operationalized through the four aspects of novel teaching techniques, technology enabled learning innovation, interactive learning activities, collaborative learning innovation and experiential learning practice. Whereas, the Student Digital Engagement was assessed through the dimensions of behavioral digital engagement, cognitive digital engagement, emotional digital engagement, social digital engagement, and digital learning participation. Before testing the hypothesis, the quality of the research instrument was tested using validity and reliability tests. The classical assumption test was conducted to analyze the feasibility of the regression model, namely normality test, multicollinearity test, and heteroskedasticity test. The main analysis for establishing the direction and size of impacts of Technology Acceptance, Individualized Learning Experience, and Learning Innovation on Student Digital Engagement was performed using multiple linear regression. Partial hypotheses were tested using t-test at 5% level of significance ($\alpha = 0.05$). F-test was used for testing the simultaneous impact of the three independent variables on Student Digital Engagement. Moreover, the coefficient of determination (R^2) was used to determine the percentage of the variance by Student Digital Engagement explained by the Technology Acceptance, Individualized Learning Experience and Learning Innovation while the unexplained variance was due to other factors outside the research model .

RESULT AND DISCUSSION

The data analysis on postgraduate students' results shows that Technology Acceptance, Individualized Learning Experience, and Learning Innovation have a good and significant simultaneous influence on Student Digital Engagement. The results of the partial hypothesis testing also show that each independent variable has a significant and positive influence on Student Digital Engagement, meaning that all study hypotheses are validated. The coefficient of determination of 0.387 means that Technology Acceptance, Individualized Learning Experience and Learning Innovation account for 38.7% of the variance in Student Digital Engagement. The remaining variance is explained by other factors not included in the research model. The model results indicate that Personalized Educational Experience has the highest impact on Student Digital Engagement. The findings illustrate the significance of digital learning experiences in enhancing engagement of postgraduate students in digital learning activities that meet students' specific needs, attributes, preferences and development.

The findings reveal that Technology Acceptance has a positive and significant impact on Student Digital Engagement among postgraduate students. The study suggests that the greater the acceptance students have of technology in the learning process, the higher the involvement students have in various digital supported academic tasks. The importance of technology acceptance is based on the fact that the involvement of students is based not only on the availability of Learning Management Systems, virtual classrooms, digital libraries, collaborative platforms and various learning applications but also on the perceptions of students toward the usefulness and ease of use of such technologies. Students who find technology as a possible tool for improving the effectiveness, flexibility and productivity of learning tend to use technology in their academic work. The perceived usefulness might motivate students to use the technology to obtain learning materials, find reference sources, participate in discussions, interact with lecturers, work with students and complete academic tasks. Conversely, a perceived ease of use could overcome technological limitations and the cognitive work needed to use a given technology. The technology is easy to understand and use, so students can concentrate on the content of the lesson, not on the difficulties of the platform. This is particularly so for postgraduate students who are often required to juggle their academic work with other professional commitments and employment. Time restrictions accommodating flexible and user-friendly technologies allow students to stay academically engaged. The acceptance of technology may also help in the readiness to explore as the students who have good views about technology are likely to be more receptive to adopting new features and digital resources. Then, continued use of technology may also foster the development of digital learning habits that increase the intensity of students' engagement with the learning environment.

The results show that Individualized Learning Experience has positive and significant influence on Student Digital Engagement of postgraduate students and it is the variable that has the most impact in the research model. The results of this study suggest that the more relevant students' learning experiences are to their needs, abilities, preferences, development, and educational and professional objectives, the more likely they are to engage in digital learning. The postgraduate students have very different educational backgrounds, professions, work experiences, digital skills and hobbies. So, a totally standard

approach to learning may not be most relevant to all kids. Individualized Learning Experience contributes to learner-centricity of the learning process as it provides students with information, activities, feedback and learning paths better suited to their individual needs. Students will be more focused and work harder to complete the learning tasks when they see the learning materials are relevant to their academic or professional goals. Custom content can help students access learning resources suited to their level of understanding and customized learning routes offer the flexibility to develop skills according to individual needs. The personalization of feedback is very important because it gives the students more precise information about their strengths, shortcomings and areas to be addressed. Well-placed comments can encourage students toward greater self-reflection and motivate them to become more involved in improving their learning. The positive impact of Individualized Learning Experience further supports the finding that postgraduate student engagement is primarily driven by the perceived relevance and value of their academic experiences. Postgraduate students have more defined learning objectives, and therefore activities pertinent to their research disciplines, professional employment or career advancement may lead to greater levels of engagement.

Results indicate that Learning Innovation has a positive and significant effect on Student Digital Engagement for postgraduate students. These findings suggest that the potential of higher education institutions and lecturers to develop new techniques, activities, media and approaches to learning can contribute to an increase in student involvement in the digital domain. The translation of traditional lectures into virtual classrooms as a form of digital learning can lead to a dull and passive learning experience. Students can be physically present in an online session but not intellectually, emotionally, or socially engaged. Learning Innovation harnesses technology to create more interactive, collaborative, immersive and problem-based learning experiences. Project-based learning could provide an opportunity for making connections between knowledge and practical implementation, whereas problem-based learning could be used as a tool to stimulate students to explore complex problems and to provide different responses. The students have already studied the basic topic so the discussion, analysis and problem solving can be done in synchronous sessions. It is also highly relevant to postgraduates in that it allows them to apply academic ideas to real professional and organizational issues. Additionally, collaborative learning can promote social interaction through the sharing of knowledge, perspectives and experiences among students. The range of academic activities may be broadened with the use of artificial intelligence, simulations, interactive multimedia, gamification and collaborative digital platforms. But the use of technology should be for educational purposes, not just because it is new. Effective Learning Innovation has to enhance the quality of interaction, improve the knowledge and promote the engagement of the learners. Diversification of learning activities may be helpful to reduce the monotony of learning and to maintain the students' attention in the learning process. Postgraduate education should be intellectually challenging to stimulate critical thinking, knowledge integration, research study and reflection.

CONCLUSION

The findings of this research suggest that Technology Acceptance, Individualized Learning Experience and Learning Innovation have a positive and significant influence on Student Digital Engagement amongst postgraduate students. From a practical point of view, higher education institutions need to increase Technology Acceptance by providing user-friendly, reliable, accessible and integrated digital learning platforms, improving the quality of technical support and developing digital orientation programs to facilitate the use of learning technologies by students. The Individualized Learning Experience should support the development of adaptive learning, customized educational content, individualized learning pathways, tailored feedback, learning analytics and the delivery of learning activities aligned with students' needs, preferences and educational and career aspirations. Also, Learning Innovation should be promoted by applying problem-based learning, project-based learning, flipped classroom, case-based learning, collaborative learning, interactive simulation and application of artificial intelligence and other innovative learning technologies. Since the greatest impact is achieved through customized Learning Experiences, higher education institutions should focus on developing adaptable, relevant and customized learning experiences for the specific needs of postgraduate students. The improvement of these three characteristics is expected to have a positive effect on active participation, academic interaction, learning motivation, cooperation, and student engagement in digital learning activities. Therefore, it would sustainable improve the Student Digital Engagement of postgraduate students.

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