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THE EFFECTS OF PEER COLLABORATION, KNOWLEDGE SHARING BEHAVIOR, AND ORGANIZATIONAL LEARNING CULTURE ON TECHNOLOGY-ENHANCED LEARNING PERFORMANCE IN DISTANCE LEARNING PROGRAMS

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ABSTRACT

The objective of this study is to investigate the effect of Peer Collaboration, Knowledge Sharing Behavior, and Organizational Learning Culture on Technology-Enhanced Learning Performance in Distance Learning Programs. This research was conducted in a quantitative manner by using survey methods of students registered in Distance Learning Programs at higher education institutions in Indonesia. The respondents were selected by using a purposive sampling approach based on their expertise in distant learning, the use of Learning Management Systems or digital learning platforms, and contact and cooperation with other students via digital media. The data was collected by an online questionnaire via google form and analyzed by multiple linier regression. The results show that Peer Collaboration , Knowledge Sharing Behavior and Organizational Learning Culture have a positive and significant effect on Technology Enhanced Learning Performance. The results show that higher education institutions offering Distance Learning Programs should improve collaborative learning activities, establish mechanisms of knowledge sharing and promote an organizational culture of continuous learning, learning innovation, the use of feedback and continuous improvement to continually improve Technology-Enhanced Learning Performance.

Keywords: *Peer Collaboration; Knowledge Sharing Behavior; Organizational Learning Culture; Technology-Enhanced Learning Performance*

INTRODUCTION

The coming of the digital technology has caused radical changes in the delivery of higher education, especially the growing popularity of Distance Learning Programs as an alternative educational model that gives students more flexibility to participate in the learning process (Kholil et al., 2020). Learning Management Systems, video conferencing, digital learning resources, online discussion forums, cloud-based collaboration tools, artificial intelligence and other learning applications allow us to perform educational processes without the limitations of space and time. However, effectiveness of distant learning is not only determined by the availability of technology but also the capability of students to use such technology to get the best learning performance (Novitasari & Nuraeni, 2022). Thus, Technology-Enhanced Learning Performance is an important dimension for measuring the effectiveness of Distance Learning Programs. Technology-Enhanced Learning Performance (TELP) refers to the effectiveness of learners' use of technology to facilitate their understanding of learning materials and completion of learning tasks, interaction with others in learning, development of knowledge and skills, and attainment of learning goals (Prayitno et al., 2024; Rahmad et al., 2024).

Peer Collaboration is considered as one of the major variables to improve Technology-Enhanced Learning Performance in Distance Learning Programs. Peer Collaboration is the method in which students interact with their peers to achieve learning goals through conversations, exchange of ideas, problem solving, feedback and various collaborative academic activities (Ansori et al., 2024). In remote learning, cooperation between students is becoming more important because the limited physical connection can lead to a sense of isolation and limit opportunities for students to get direct academic help. Such cooperation is facilitated by digital technology through discussion forums, video conferencing, instant messaging, shared documents, virtual study groups and a variety of collaborative learning tools (Sri & Anggraini, 2023; Nuraeni & Westisi, 2020). Moreover, it is assumed that Technology-Enhanced Learning Performance in Distance Learning Programs has an important relationship with Knowledge Sharing Behavior due to the cooperation of students. Knowledge Sharing Behavior refers to the willingness and behavior of sharing knowledge, information, experience, skills, learning resources and solutions with others (Anggraini, 2020). In distant learning, knowledge is received not only from materials presented by lecturers, but also by interaction and exchange of information among students. Students may vary in their experience, expertise, information resources and understanding. Knowledge sharing activities may turn individual knowledge into a learning resource for the group (Nuraeni et al., 2020; Jaya et al., 2017). Further, it is forecasted that Organizational Learning Culture will have a vital impact in enhancing Technology-Enhanced Learning Performance in Distance Learning Programs (Rahmad et al., 2024). Organizational Learning Culture includes a system of values, norms, practices and organizational environment that inspires people to learn continuously, to get new information, to exchange experiences, to think about, to adapt to change and to develop their skills continuously (Solehuddin et al., 2023). Learning culture in educational institutions is not only a formal academic activity, but also to what extent the higher education institutions create an environment where students, teachers and educational staff to be involved in the course of lifelong learning (Anggraini et al., 2024).

The aim of this study is to examine the effects of Peer Collaboration, Knowledge Sharing Behavior and Organizational Learning Culture on Technology-Enhanced Learning Performance in Distance Learning Programs. This study is especially relevant because the increase in investment and use of technology in education should be accompanied by a greater understanding of the social, behavioral and organizational factors that influence the efficient use of technology in the learning process. The study is expected to contribute to the literature on educational management, technology-enhanced learning, collaborative learning, knowledge management and organizational learning by clarifying the determinants of Technology-Enhanced Learning Performance within the framework of distance learning. The study also seeks to contribute to understanding the joint influence of individual and organizational characteristics on the formation of effective digital learning. The results are expected to provide a foundation for higher education institutions providing Distance Learning Programs to develop approaches to enhance quality of technology-based learning.

METHODS

This research used a quantitative approach and survey method to investigate the effect of Peer Collaboration, Knowledge Sharing Behavior and Organizational Learning Culture on Technology-Enhanced Learning Performance in Distance Learning Programs. The population of the study was students who were enrolled in the Distance Learning Programs at higher education institutions in Indonesia. The sampling technique used was purposive sampling with the following criteria of respondents: must be an active student of a Distance Learning Program; must have participated in the program for at least one semester; must use a Learning Management System or digital learning platform for academic activities; must have experienced participating synchronous and asynchronous online learning; and must have interacted and collaborated with other students through digital media or platforms. Data were collected using an online questionnaire through Google Forms. All questions in the study instrument were scored on a 5-point Likert scale from 1 “strongly disagree” to 5 “strongly agree”.

Peer Collaboration variable was examined by the aspects of peer contact, collaborative problem solving, peer assistance, peer feedback and joint learning activities. Knowledge sharing behavior was operationalized as knowledge giving, knowledge gathering, information sharing, experience sharing and learning resource sharing. The elements of Organizational Learning Culture were measured by continuous learning, openness to new information, support for learning, knowledge sharing and continual improvement oriented. Technology-Enhanced Learning Performance was evaluated in terms of technology-supported learning efficacy, digital learning engagement, technology-enabled knowledge acquisition, technology-supported task performance, and digital learning accomplishment. The data were analyzed with multiple linear regression analysis to study the effect of Peer Collaboration, Knowledge Sharing Behavior and Organizational Learning Culture on Technology-Enhanced Learning Performance, partially and simultaneously. The hypothesis testing was partially performed by the t-test at the significance level of 5% ($\alpha = 0.05$). Simultaneous effect of the three independent variable was tested using the F-test. The coefficient of determination (R2) was also used as a measure of the extent of variation in Technology-

Enhanced Learning Performance explained by Peer Collaboration, Knowledge Sharing Behavior, and Organizational Learning Culture.

RESULT AND DISCUSSION

The data analysis of respondents who are students taking Distance Learning Programs results show that simultaneously Peer Collaboration, Knowledge Sharing Behavior and Organizational Learning Culture have a positive and significant effect on Technology-Enhanced Learning Performance. The results of partial hypothesis testing also indicate that Technology-Enhanced Learning Performance is significantly and positively influenced by all the independent variables, meaning that all the hypotheses of the study are supported. The coefficient of determination of 0.386 indicates that 38.6 percent of the variation in Technology-Enhanced Learning Performance is explained by Peer Collaboration, Knowledge Sharing Behavior and Organizational Learning Culture. The remaining variance is explained by other factors external to the research model. The regression results indicate that Organizational Learning Culture has more effect on Technology-Enhanced Learning Performance than Peer Collaboration and Knowledge Sharing Behavior . The results suggest that the organizational climate of continuous learning, willingness to acquire new knowledge, knowledge sharing and continuous improvement is an important factor to maximize the use of technology to improve students' learning performance in Distance Learning Programs.

The results show that Peer Collaboration has significant and positive impact on Technology-Enhanced Learning Performance of students of Distance Learning Programs. The result shows that the higher level of cooperation that is formed among the students, the higher the capability in using technology to support the achievement of learning goals. Distance learning students are not physically in the same place and so have less opportunity to relate directly to their peers. However, the presence of Learning Management Systems, discussion forums, video conferences, group chats, shared documents and a number of collaborative learning platforms allows the maintenance of intense collaborative processes. With Peer Collaboration, students can discuss learning materials they don't fully understand, share various perspectives, collaboratively address challenges, provide feedback, and motivate each other to complete different academic tasks. Such collaborative approaches involve technology not only as a means of accessing learning resources but also as a platform for creating interactive and participative learning processes. When students explain a subject to their classmates they are also developing their own knowledge and reinforcing the learning material. Working together to solve problems helps students to incorporate different views and skills, and it becomes easier to solve academic problems. Peer feedback allows students to identify weaknesses in their work or understanding and can offer opportunities for improvements. In addition to the academic benefits, Peer Collaboration could help with the sense of isolation, which can sometimes be an issue in remote learning. Social support from peer interaction can increase students' motivation, engagement, and continued involvement in the learning process. Collaboration in the use of technology may also help the students as students may exchange expertise on the use of platforms, apps and other digital learning tools.

The results indicate that Knowledge Sharing Behavior has a positive and significant effect on Technology-Enhanced Learning Performance on students attending the Distance Learning Program. The results indicate that students' motivation in sharing and gaining information is an important factor for improving the efficiency of technology-based learning. "Distance learning is a way of students' access to the different sources of knowledge, which can be different from a student to a student. This is because students can access information through digital books, scientific articles, instructional videos, professional experiences, online resources and other learning activities. Such individual information can be shared to the other students via Information Sharing Behavior and can be a shared learning resource later. Students actively share knowledge and information, experiences, learning resources and answers to challenges. Increasing the knowledge base of the group may be useful. At the same time, students who actively collect information from other students and who are given such information, have the opportunity to deepen their comprehension of the learning materials. Digital technology is a great support for this process, because the sharing of knowledge can be done without spatial and temporal restrictions through discussion forums, messaging applications, shared cloud folders, collaborative documents, digital learning communities and Learning Management Systems. The activities of knowledge giving and knowledge collecting create a two-way flow of knowledge to make students both receivers and suppliers of information at the same time. It also enables pupils to rethink and restructure their previous knowledge and improves their understanding when they explain their information to others. Besides, having access to other students' experiences and perspectives allows one to look at issues from many different angles. Sharing information can also reduce the knowledge gap between students. Students with special knowledge or skills can assist other students having difficulty.

Results show that Organizational Learning Culture has a positive and significant impact on Technology-Enhanced Learning Performance of students in Distance Learning Programs and it is the variable with the greatest impact in the study model. The results suggest that the success of technology-based learning is not only dependent on individual student behavior, but also significantly impacted by an institutional environment that supports learning, knowledge creation, adaptability and continuous improvement. An organizational learning culture is a strong atmosphere that encourages students to continue learning, open to new information and technology, to experiment and to share experiences, to use feedback and to improve the learning process based on prior experiences. In the setting of Distance Learning Programs, where technology, learning techniques and the needs of students are continually changing, a learning culture becomes more important. Institutions with a strong learning culture have Learning Management methods and a variety of digital platforms, but also methods that help students to use such technology efficiently. Such support can include digital orientation, classes on the use of platforms, technical support, digital learning resources, online academic support and other initiatives to enhance digital learning capacities. Organizational Learning Culture also provides opportunities for lecturers to reinvent their teaching methods so that technology is not used merely to transfer traditional learning to a digital environment, but is used to create more interactive, flexible and student-centred learning experiences. An open attitude to feedback allows institutions to identify difficulties in the implementation of remote learning and to make adjustments based on the experiences of both students and lecturers.

CONCLUSION

The research found that Peer Collaboration, Knowledge Sharing Behavior and Organizational Learning Culture had a positive and significant effect on Technology-Enhanced Learning Performance in Distance Learning Programs. From a practical perspective, higher education institutions need to enhance Peer Collaboration by creating collaborative assignments, virtual study groups, peer discussions, collaborative projects, peer mentoring and peer feedback systems that allow students to actively interact and learn with their peers. The enhancement of Knowledge Sharing Behavior should be done by developing a learning environment to promote students to share information, experiences, learning resources and knowledge with other students, by delivering digital knowledge repositories, online learning communities, collaborative platforms and discussion forums. In addition, the culture of organizational learning should be reinforced through continuous learning, openness to new knowledge and technologies, support for learning innovation, use of feedback, development of digital competency, and continuous evaluation and improvement of the learning process. By improving these three factors, it is expected to improve the effectiveness of using technology to support student engagement, knowledge acquisition, task completion, collaboration and achievement of learning objectives, and thus sustainably improving the performance of Technology-Enhanced Learning.

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