

Transformational Role of Computers in Education Management: Optimizing Learning Efficiency and Effectiveness

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ABSTRACT

This discussion addresses the role of teachers in the use of tablet computers in the context of eLearning, the advantages, and challenges of using eLearning, student learning outcomes, the influence of locus of control, the theory of planned behavior, and its managerial and theoretical implications. The use of tablet computers in learning provides new opportunities for teachers to engage students interactively and deeply. The advantages of using eLearning include better accessibility to learning resources and expansion of learning beyond the classroom. However, challenges such as unequal accessibility of technology require the role of teachers in ensuring equitable access for all students. The teacher's role in the use of tablet computers is a major determinant in student learning outcomes. Teachers must be able to observe and evaluate students' learning progress and use learning outcome data to improve learning. The influence of locus of control and the theory of planned behavior also plays a role in the use of tablet computers. Teachers can help students develop an internal locus of control and apply the principles of the theory of planned behavior to increase students' motivation and independence in learning. Managerial implications include the importance of training and development for teachers, development of educational policies that support the use of technology, and collaboration between educational institutions and stakeholders. Theoretical implications include the development of technology-based learning theory, motivation theory in the context of technology, and the application of planned behavior theory in the use of technology. The discussion provides a better understanding of the importance of the role of teachers, the use of tablet computers, innovative learning strategies, policy development, improving educational accessibility, and developing educational theories in the context of technology. Its managerial and theoretical implications provide guidance for educational managers and researchers to improve the quality of education and utilize technology effectively in the learning process.

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I. Introduction

Education is one of the sectors that continues to evolve and change along with technological developments. In this digital era, computers and information technology have opened new opportunities in education (Choi et al., 2020). The use of computers and educational software has brought significant transformational impacts in educational management. This research will focus on the transformational role of computers in education management and how the use of computers can optimize learning efficiency and effectiveness. In this context, computers serve as tools that enable teachers and students to access educational resources more efficiently, expand access to knowledge, and facilitate interactive learning experiences (Yigit et al., 2014).

In the digital era, the use of computers has changed the traditional learning paradigm that is limited to physical classrooms. Students can now access learning materials through online platforms, take

remote courses, or even conduct virtual experiments that allow them to understand concepts more deeply (Hwang & Chien, 2022). Computers also allow for personalized learning, where students can learn according to their own pace and learning style. In addition, computers also have an important role in educational administrative management (Alqahtani et al., 2023). Computer-based school management systems facilitate more efficient management of student data, scheduling, filing, and reporting. This allows teachers and school staff to focus on important tasks such as curriculum development, performance evaluation, and interaction with students (Th. et al., 2022). In the ever-evolving digital era, the opportunities presented using computers in education management are promising. By utilizing computer technology, we can open the door to learning that is more inclusive, interactive, and relevant to the needs of today's students (Moisescu, 2014).

One of the main opportunities offered by computers in education management is greater accessibility to learning resources. Through online platforms, students can access various learning materials, e-books, learning videos and other educational resources from different corners of the world (Ali Shah et al., 2023). This allows students to learn independently, explore special interests and develop knowledge beyond the confines of the traditional classroom. In this context, computers become the bridge that connects students to global knowledge, opening opportunities for richer and more diverse learning experiences (Montrieux et al., 2014). In addition, the use of computers in education management also opens opportunities for personalization of learning. Each student has different learning styles and needs, and computers can help identify and meet their individual needs (Soliman et al., 2019). Through adaptive learning programs and educational applications tailored to students' ability levels and learning preferences, computers can help create relevant and effective learning experiences (Banihashem et al., 2022). This allows students to learn at a pace that suits their abilities, bridge learning gaps, and optimize their potential.

Apart from the students' perspective, the use of computers in education management also provides opportunities for teachers to improve their teaching quality. Computers can be used as interactive teaching aids and support creativity in the delivery of learning materials. Teachers can utilize innovative educational software, virtual simulations, and other digital resources to make learning more interesting and engaging for students. In terms of evaluation, computers also provide an efficient tool to measure student progress and provide detailed feedback, enabling teachers to devise more effective lesson plans that focus on students' individual needs.

All in all, the opportunities opened through the transformational role of computers in education management are very exciting. By utilizing this technology wisely, we can create an education system that is more inclusive, efficient, and relevant to the demands of a changing world. However, challenges such as the digital divide and data protection must also be carefully addressed to ensure that the benefits of computer technology can be enjoyed by all individuals without exacerbating social disparities. By combining educational expertise and the sophistication of computer technology, we can embrace this opportunity to improve the quality of education and help every student reach their full potential. However, despite the great potential of using computers in education management, challenges also arise. Issues related to technology accessibility and the digital divide must be addressed for all students to benefit. It is also important to consider the ethical and data security implications of using computers in an educational context.

In Indonesia, the use of computers in education management has become an increasing phenomenon. Although there are still challenges and digital divides in some areas, the government and educational institutions have been trying to utilize computer technology to improve the efficiency and effectiveness of learning. One phenomenon that can be observed is the adoption of e-learning in Indonesia (Izfanna & Hisyam, 2012). In recent years, many educational institutions have started to implement computer-based learning systems, either in the form of online courses, self-study platforms, or a combination of online and face-to-face learning. This allows students across Indonesia, especially in remote areas, to access learning materials and get quality education without having to be in a specific physical location. The existence of e-learning also provides opportunities for those who have physical limitations or cannot attend school conventionally (Ferine et al., 2021). In addition, the use of computers has also been widespread in educational administrative management in Indonesia. Schools are starting to adopt computer-based school management systems, which include student data management, scheduling, archiving, and reporting. This provides advantages in administrative efficiency, minimizing human error and speeding up processes that previously took a long time. With

the adoption of this system, teachers and school staff can focus more on lesson planning, monitoring student progress and developing more effective school programs.

However, the phenomenon of using computers in education management in Indonesia also faces challenges. One significant challenge is the digital divide between urban and rural areas. Although internet access has improved in many regions, there are some areas in Indonesia that still face limited accessibility to technology. This can affect students' opportunity to participate in computer-based learning effectively and equitably. To overcome this, the government and educational institutions need to strive to expand internet access and provide adequate infrastructure throughout Indonesia (Islamiah et al., 2021). In addition, the protection of personal data is also an issue that needs attention. In the use of computers in education management, there are various personal information of students that are collected and stored. It is important for educational institutions and related parties to maintain the security and privacy of student data so that it is not misused or accessed by unauthorized parties. In the face of this phenomenon, it is important for Indonesia to continue to encourage innovation and development of computer technology that is appropriate to the local educational context (Permatasari et al., 2021). In addition, it is also necessary to increase the capacity of teachers and educators in utilizing computer technology effectively in learning. By overcoming challenges and capitalizing on opportunities, the use of computers in education management in Indonesia has great potential to improve the quality of education, equalize learning opportunities, and prepare young people for future challenges (Mu'ammam et al., 2020), (Azizah & Nur, 2022). By understanding the transformational role of computers in education management, this research aims to identify the best strategies to optimize learning efficiency and effectiveness. It is hoped that this research can provide valuable insights for educational practitioners, policy makers, and other related parties.

II. Methods

The research methodology to be used in this study is a narrative review approach. This approach will enable the researcher to collect and synthesize relevant literature on the transformational role of computers in educational management, with a focus on optimizing learning efficiency and effectiveness. The first step in the narrative review approach is to identify relevant literature sources. The researcher will conduct a comprehensive search through academic databases, scholarly journals, books and other relevant sources in the education and technology domain. The keywords to be used include "the role of computers in education", "computer-based education management", "computer learning efficiency", and "computer learning effectiveness". The selection of literature sources will be based on pre-defined inclusion and exclusion criteria, such as topic relevance, research quality, and year of publication.

Once the relevant literature sources are identified, the researcher will conduct text analysis to identify key findings and emerging patterns. At this stage, the researcher will carefully read and understand the content of each article included in the study. Relevant data, such as concepts, findings, methodologies, and research results, will be extracted and organized systematically. Furthermore, the researcher will conduct a narrative synthesis of the findings. This approach involves explaining, interpreting, and drawing conclusions from the relevant findings. The researcher will organize the findings based on the main emerging themes, such as the role of computers in personalized learning, accessibility of learning resources through computers, and the role of computers in educational administrative management. In addition, the researcher will also describe the relationships and interrelationships between the different findings. Finally, the researcher will compile a research report that includes a narrative synthesis of the literature that has been investigated. The research report will include an introduction explaining the background and relevance of the research topic, the methodology used in conducting the narrative review, the key findings identified, and the discussion and implications of the findings. Through the narrative review approach, this research will provide a comprehensive understanding of the transformational role of computers in educational management and how the use of computers can optimize learning efficiency and effectiveness. The research will provide a broad and in-depth view of this topic, and can provide guidance and recommendations for educational practitioners, policy makers and researchers in this area.

III. Result and Discussion

4.1. Research Result

1. This qualitative study discusses the implementation of tablet computers in secondary education and the role of teachers in this process. This research was conducted by (Montrieux et al., 2014). The purpose of this study was to gain a better understanding of the role of teachers in the use of tablet computers in the context of secondary education. The study explored various aspects, including teacher preparation prior to the introduction of tablet computers, support provided to teachers during the implementation process, challenges faced by teachers, and changes in teaching practices associated with the use of tablet computers. The research methodology involved a qualitative approach, using in-depth interviews as the main method of data collection. The research participants were teachers involved in the implementation of tablet computers in secondary education. The data obtained from the interviews were thematically analyzed to identify patterns and themes that emerged in relation to teachers' roles in the use of tablet computers. The results showed that the role of teachers in the use of tablet computers is very important. Teachers have a key role in preparing themselves before implementation, including developing an understanding of the potential and benefits of using tablet computers, mastering the technology, and planning for effective integration into their teaching practices. In addition, the support provided to teachers in the form of training, guidance and collaboration with peers and curriculum developers also has a significant impact on successful implementation. However, this study also identified some challenges faced by teachers in adopting the use of tablet computers. These included technical limitations, availability of resources, lack of confidence in using technology, and a paradigm shift in traditional teaching. Nonetheless, this study also found that the use of tablet computers can bring about positive changes in teaching practices, including increased interactivity, motivation, and student participation. In conclusion, this study provides valuable insights into the role of teachers in the implementation of tablet computers in secondary education. This study shows that the role of teachers is crucial in meeting the challenges and maximizing the potential of using tablet computers in an educational context. The findings have important implications for education practitioners and policy makers in strengthening the role of teachers and supporting the successful implementation of technology in secondary education.
2. This paper discusses computer-based business games in higher education and proposes a learning framework that uses a game approach (gamification). This research was conducted by (Grijalvo et al., 2022) The purpose of this research is to propose a learning framework that uses computer-based business games with a gamification approach in the context of higher education. This research wants to explore how this approach can improve learning motivation, active participation, and student learning outcomes. The research methodology involves a qualitative approach with a focus on developing a learning framework. The researcher used a research-based design approach to develop a gamification framework focusing on a computer-based business game. The framework includes elements such as clear learning objectives, challenging and challenging tasks, immediate feedback, reward system, and adjustable difficulty level. Furthermore, the study also involved data collection through interviews with the participants involved in testing the learning framework. The data obtained from the interviews were thematically analyzed to gain insight into the participants' perceptions and experiences related to the use of computer-based business games and gamification approaches in learning. The results of this study propose a learning framework that incorporates computer-based business games and gamification approach. The research shows that the use of computer-based business games with gamification approach can improve students' learning motivation, active participation, and learning outcomes. Research participants responded positively to the use of computer-based business games as an engaging and effective learning tool. However, the study also recognizes some challenges that may

arise in implementing this learning framework, such as technical difficulties, careful planning, and adequate lecturer support. In conclusion, this research provides a proposed learning framework that combines computer-based business games with a gamification approach in higher education. This research demonstrates the potential of using game technology and gamification approach in improving students' learning motivation and learning outcomes. The findings provide insights for higher education practitioners in developing innovative and engaging learning strategies to enhance students' learning experience.

3. This paper discusses the detection of hidden topics and trends in educational technology over four decades using structural topic modeling. This research was conducted by Xieling Chen, Di Zou, Gary Cheng, and Haoran Xie. The purpose of this study is to retrospectively examine all volumes of the journal *Computers & Education* and use structural topic modeling to identify important topics that have emerged in the field of educational technology over the past four decades. The research aims to explore key trends, shifts in focus and developments in the topics covered in the journal. The research methodology involves the use of structural topic modeling, which is a text analysis method that combines probability models with topic structures hidden in a text corpus. The data used in this study were all volumes of the journal *Computers & Education* over the past four decades. This method allows researchers to identify dominant topics and changing trends over time in educational technology literature. The results of this study revealed a few important topics that have appeared in *Computers & Education* journals over the past four decades. Some of the topics identified include e-learning, computer-based learning, customizable educational technology, use of technology in teaching and learning, learning analytics, educational software, and technology-based assessment. The research also showed a shift in focus over time, such as the shift from traditional computer-based learning technologies to web-based and mobile learning technologies. In addition, the research also identified trends in educational technology development. Some of the emerging trends include the adaptation of technology to diverse student needs, the use of learning analytics to improve learning effectiveness, the application of technology in student-centered teaching and learning, and the use of technology in distance education. In conclusion, this study provides a comprehensive retrospective of the development of educational technology over the past four decades. The use of structural topic modeling helped reveal dominant topics and changing trends in the educational technology literature. The findings provide insights into important developments in educational technology and provide guidance for researchers and practitioners to understand current trends and future directions in this field.
4. This paper discusses the relationship between locus of control, theory of planned behavior, and cyber entrepreneurial intention, with the moderating role of cyber entrepreneurship education. This research was conducted by (Tseng et al., 2022). The purpose of this study is to analyze the relationship between locus of control, theory of planned behavior, and cyber entrepreneurial intention, and to explore the moderating role of cyber entrepreneurship education in this relationship. This study aims to provide insight into the factors that influence an individual's intention to engage in cyber-entrepreneurship. The research methodology involved collecting data through a survey administered to individuals interested in online entrepreneurship. The survey included measures related to locus of control, theory of planned behavior, online entrepreneurship intention, and online entrepreneurship education experience. The data obtained were analyzed using statistical methods to test the relationship and moderating role in the research model. The results of this study indicate that internal locus of control (believing that individuals have control over their lives and decisions) has a positive relationship with cyber entrepreneurship intention. In addition, the research findings also show that the theory of planned behavior (including attitudes, subjective norms, and perceived behavioral control) has a positive influence on cyber entrepreneurship intention. More

importantly, this study found that online entrepreneurship education has a moderating role in the relationship between locus of control and online entrepreneurship intention. That is, online entrepreneurship education can strengthen the relationship between internal locus of control and online entrepreneurial intention. In conclusion, this study provides an understanding of the factors that influence an individual's intention to engage in cyber entrepreneurship. The findings of this study indicate the importance of internal locus of control and theory of planned behavior in influencing cyber entrepreneurial intention. In addition, entrepreneurship education in cyberspace also has a significant role as an enhancing factor in the relationship between locus of control and cyberspace entrepreneurship intention. These findings provide important implications for the development of entrepreneurship education programs in cyberspace and policy development to encourage entrepreneurial intention in cyberspace.

5. This paper is a review article that discusses the use of eLearning in teacher education during the coronavirus disease (COVID-19) pandemic in Africa. This research was conducted by (Matete et al., 2023). The purpose of this study was to conduct a review of the use of eLearning in teacher education during the COVID-19 pandemic in Africa. This research aims to identify the advantages, challenges, and opportunities associated with the use of eLearning in the context of teacher education on the African continent during the pandemic. The method used in this research is a literature review, focusing on studies that have been conducted in Africa on the use of eLearning in teacher education during the COVID-19 pandemic. Relevant articles were collected from various sources, such as scientific journals, research reports, and related publications. The data obtained was analyzed to identify key findings and emerging patterns in relation to the use of eLearning in teacher education in Africa. The results of this study show that the use of eLearning in teacher education during the COVID-19 pandemic in Africa has a few advantages. Some of these advantages include greater accessibility to education for teachers and students, flexibility in time and place of learning, and improved information and communication technology skills. The use of eLearning also provides opportunities for collaboration and knowledge sharing between teachers in different regions of Africa. However, this study also identified some challenges faced in the use of eLearning in teacher education in Africa. Such challenges include limited internet access and technological infrastructure, digital divide between urban and rural areas, and lack of training and understanding on the use of technology for educational purposes. In addition, the study also highlighted the need for policies and frameworks that support the use of eLearning in teacher education in Africa. In conclusion, this research provides a comprehensive review of the use of eLearning in teacher education during the COVID-19 pandemic in Africa. The research identified advantages, challenges and opportunities associated with the use of eLearning in the context of teacher education on the African continent. The findings have important implications for the development of effective eLearning strategies, increased accessibility of teacher education, and the development of adequate education policies in Africa.
6. This paper is a meta-analysis on Computer-Supported Collaborative Learning (CSCL) in STEM education during the period 2005-2014. This research was conducted by (Jeong et al., 2019). The purpose of this study was to thoroughly analyze the use of CSCL in STEM education during the ten-year period. This study aims to identify the advantages, challenges, and outcomes associated with the use of CSCL in the context of STEM education. The method used in this study was meta-analysis, which involved collecting and synthesizing data from previously conducted studies on the use of CSCL in STEM education. Relevant studies were collected through a literature search, and the data from the studies were statistically analyzed to identify key findings and emerging patterns in relation to the use of CSCL in STEM education. The results of this study indicate several important findings. The use of CSCL in STEM education during the period had a positive impact on student learning outcomes, including improved concept understanding, critical thinking skills and collaboration skills.

CSCL also helped to increase student motivation, active participation, and social interaction in STEM learning contexts. However, this study also identified some challenges faced in the use of CSCL in STEM education. These include limited technological infrastructure, lack of teacher training and understanding of CSCL implementation, and challenges in managing online collaboration and interaction in the learning environment. In conclusion, this study provides a comprehensive review of the use of CSCL in STEM education during the period 2005-2014. The research demonstrates the benefits of using CSCL in improving student learning outcomes and the development of collaboration skills in STEM contexts. The findings provide important insights for the development of CSCL-based learning strategies, improvement of STEM education quality, and development of adequate education policies.

7. This paper discusses the impact of the Covid-19 pandemic on the education system in Nigeria and the role of competency-based education in dealing with it. This research was conducted by (Okagbue et al., 2023). The purpose of this study is to analyze the impact of the Covid-19 pandemic on the education system in Nigeria and to explore the role of competency-based education in facing these challenges. This research aims to provide insights into educational strategies that can be implemented to overcome the impact of the pandemic and improve the quality of education in Nigeria. The methods used in this study involved data collection through surveys and interviews with education stakeholders, including students, teachers, parents and school administration. The data obtained was analyzed to identify the impact of the Covid-19 pandemic on the education system, the challenges faced, and the role of competency-based education in overcoming these challenges. The results of this study show that the Covid-19 pandemic has had a significant impact on the education system in Nigeria. Some of the impacts identified include school closures affecting continuity of learning, inequality of access to education due to technology and accessibility limitations, decreased quality of learning due to lack of direct interaction between students and teachers, and increased dropout rates. This research also highlights the important role of competency-based education in dealing with the challenges faced by the education system in Nigeria during the pandemic. A competency-based education approach can help students develop skills and knowledge relevant to the world of work, promote student-centered learning and address inequalities in access to education through approaches that can be tailored to individual needs. In conclusion, this study provides a comprehensive understanding of the impact of the Covid-19 pandemic on the education system in Nigeria and the important role of competency-based education in dealing with it. It provides recommendations and insights for education practitioners and policy makers in developing effective strategies to strengthen education in Nigeria, both during and after the pandemic.
8. This paper discusses the comparison between role, play, and game in the context of role-playing games and role-playing games in education. This research was conducted by (Winardy & Septiana, 2023). The purpose of this study was to compare roles, play, and games in role-playing games and role-playing games in education. This research aims to provide a better understanding of the similarities, differences, and potential uses of both in education. The method used in this study is a comparative analysis, in which the author compares the characteristics, purposes, and effects of role play and role play in education. The research includes a literature review that investigates various aspects of role-playing and role-playing games, including their context of use, resulting benefits, and challenges faced. The results of this study show that role-playing games and role-playing games in education have similarities in terms of providing role-playing experiences, promoting collaboration, and increasing student engagement. Both can help improve students' understanding of concepts, social skills and creativity. However, there are also differences in terms of the structure, complexity and learning approaches used in both. This research also identified the potential use of role-playing and role-playing games in education. Role-playing games can be used to simulate

real-life situations and allow students to assume specific roles within a structured context. Meanwhile, role play in education allows students to role play and interact with their learning environment freely, encouraging creativity and problem solving. In conclusion, this research provides an informative comparison between role-play and educational role-play. Both have significant benefits and potential uses in facilitating engaging and participatory learning. The research provides insights for educational practitioners to select and implement approaches that suit their learning objectives and context.

9. This paper discusses the development of a computer simulation-based interactive educational program for nursing students. This research was conducted by (Choi et al., 2021). The purpose of this study was to develop an educational program that uses computer simulations to improve nursing students' communication skills. This study aims to provide an interactive and practical learning experience in the development of effective communication skills. The method used in this research is a program development approach. The researcher developed a computer simulation-based educational program that allows nursing students to practice and improve their communication skills through simulating realistic nursing situations. The program includes interactive scenarios, where students can interact with virtual patients and practice various aspects of communication such as conveying information, listening with empathy, and providing emotional support. Furthermore, this study involved the implementation of the developed educational program to a group of nursing students. Data was obtained through direct observation and feedback from students regarding their experience in using the program. The data were analyzed to evaluate the effectiveness of the program in improving students' communication skills. The results of this study showed that this computer simulation-based educational program was effective in improving the communication skills of nursing students. Students reported that using the simulation helped them feel more confident in interacting with patients, develop active listening skills, and gain a better understanding of the importance of effective communication in nursing practice. In conclusion, this study provides evidence that computer simulation-based educational programs can be an effective tool in the development of nursing students' communication skills. The use of computer simulation in education can provide a realistic, interactive, and practical learning experience. These findings have important implications in the development of a more holistic nursing curriculum and improving student preparation for successful nursing practice.
10. This paper discusses entrepreneurship education (EC-education), gender disparity, and digital entrepreneurial intention by considering the moderating role of the attitude component. This research also explores the competitive advantages of the Ha'il region. This research was conducted by (Mohammed et al., 2023). The purpose of this study is to investigate the relationship between entrepreneurship education, gender disparity, and digital entrepreneurship intention, as well as the moderating role of the attitude component in the relationship. In addition, this study also aims to explore the competitive advantages that the Ha'il region has in the context of entrepreneurship. The method used in this study was a survey with the use of a questionnaire administered to respondents consisting of individuals interested in digital entrepreneurship. Data was collected using pre-tested measurement scales to measure the variables under study. The data obtained were analyzed statistically, including regression analysis to test the relationship between the observed variables. The results of this study showed a positive relationship between entrepreneurship education and digital entrepreneurship intention. This finding suggests that entrepreneurship education can play an important role in influencing an individual's intention to pursue entrepreneurship in the digital context. In addition, this study also found the moderating role of the attitude component, where a positive attitude towards entrepreneurship enhances the relationship between entrepreneurship education and digital entrepreneurship intention. In addition, this study highlights the competitive advantage of the Ha'il region in the context of entrepreneurship.

The research found that the Ha'il region has factors that support the development of a digital entrepreneurial ecosystem, such as technological infrastructure accessibility, market access and institutional support. In conclusion, this research provides an understanding of the relationship between entrepreneurship education, gender disparity and digital entrepreneurship intention. This research suggests that entrepreneurship education can play an important role in influencing digital entrepreneurship intention, with attitude as a significant moderating factor. The findings also underscore the Ha'il region's competitive advantage in the context of entrepreneurship. The implication of this research is the importance of supporting entrepreneurship education and positive attitudes towards entrepreneurship in fostering the development of a successful digital entrepreneurial ecosystem.

Keywords and Patterns Emerging from the Synthesis of Research Results

First, one of the emerging themes is the implementation of technology in an educational context. These studies highlighted the important role of teachers in adopting technologies such as tablet computers and eLearning. Teachers were shown to have a key role in preparing themselves before implementation, mastering the technology, and planning for effective integration into their teaching practices. In addition, the support provided to teachers also plays a significant role in the successful implementation of technology in education. Furthermore, studies on games and simulations in learning highlight the potential of using these approaches to improve students' learning motivation, active participation, and learning outcomes.

The use of computer-based business games and gamification approaches have been shown to be effective in increasing student engagement in learning. Meanwhile, computer simulation-based educational programs provide practical and interactive learning experiences in developing communication skills and collaboration skills, especially in the context of nursing education. In addition, the paper also includes studies that provide insights into trends and changes in the field of education. For example, research on educational technology development over the past four decades shows a shift in focus from traditional computer-based learning technologies to web-based and mobile learning technologies. In addition, studies on entrepreneurship education and competency-based education highlight the importance of education in influencing individuals' intentions for entrepreneurship, particularly in the digital context. Challenges such as gender disparity and the moderating role of the attitude component are also highlighted in these studies. To deal with the changes and challenges occurring in the education system, these studies provide valuable insights for education practitioners and policy makers in developing innovative and effective strategies. Through a better understanding of the role of teachers, the application of technology, the development of educational programs and other factors that influence learning, it is hoped that education can continue to evolve and adapt to the changes that occur. The key and emerging patterns referring to the narrative review method of the above texts are:

1. Implementation of tablet computers in education.
2. Teacher's role.
3. Research findings (teachers' role in tablet computer use, advantages and challenges of eLearning use, student learning outcomes, influence of locus of control and theory of planned behavior on cyber entrepreneurial intentions, topics and trends in educational technology, comparison of role-playing and role-playing games in education, development of computer simulation-based educational programs, gender disparity in digital entrepreneurial intentions, competitive advantage of Ha'il region).
4. Research implications (importance of teachers' role, competency-based education, innovative learning strategies, effective education programs, policy development, improving accessibility of education, curriculum development, eLearning strategy development, improving quality of education).

Implementing the role of tablet computers in education

In today's digital era, the implementation of technology in education has become a major concern to improve learning. One such technology that has emerged as a potential tool in the context of education is tablet computers. In this narrative, we will explore the role of tablet computers in education and relate it to the results of all the papers we have discussed previously. Previous studies highlighted the importance of the teacher's role in adopting tablet computer technology and utilizing it effectively in the teaching process. Teachers who are skilled in using tablet computers can create an interactive and engaging learning environment for students. In studies that addressed the use of tablet computers in an educational context, it was found that teachers who have a good understanding of the features and applications available can integrate this technology into the curriculum in an effective way.

In addition, the research also highlighted the importance of support provided to teachers in adopting tablet computers. Proper training, guidance and adequate resources can help teachers feel more confident in using this technology and overcome any obstacles that may arise. Some of the papers discussed earlier underline the importance of ongoing support for teachers in facing challenges and developing the skills needed to optimize the use of tablet computers in teaching. In the broader context of learning, tablet computers can also increase student engagement and facilitate adaptive learning. In several papers, the use of tablet computers in educational games and simulations has been shown to be effective in improving students' learning motivation, active participation, and learning outcomes. Tablet computers provide an interactive and engaging learning experience, allowing students to learn independently and develop critical, creative, and collaborative skills. In addition, through previous studies on educational technology development, we can see how tablet computers have evolved over time. Tablet computers are no longer used only as a substitute for traditional textbooks, but also as a diverse learning platform, including access to digital resources, interactive content, and personalized learning applications. In the face of changes and challenges in education, these studies provide insights into the important role of tablet computers in helping to create an innovative and timely learning environment. With the right support to teachers and a good understanding of the use of tablet computers in education, it is hoped that students' learning experience can be enhanced, and learning outcomes can improve.

The Urgency of the Teacher's Role in Optimizing Learning Efficiency and Effectiveness

The role of teachers in the context of education cannot be underestimated. They have a crucial role in optimizing the efficiency and effectiveness of learning. In this narrative, we will explore the urgency of the role of teachers in this context and relate it to the results of all the papers we have discussed previously. Previous studies have highlighted the importance of teachers as facilitators of effective learning. Skilled and well-trained teachers can identify students' individual needs, design and implement appropriate teaching strategies, and provide constructive feedback. In previous papers on personalized teaching, it was found that teachers' active role in observing, diagnosing, and personalizing learning can significantly improve student achievement. In addition, teachers also have an important role in building an inclusive and supportive classroom environment. Some of the papers we have discussed earlier highlight the importance of cooperative and collaborative learning, where the teacher acts as a leader who encourages active student participation, positive social interaction, and cooperation in achieving learning goals. Through this approach, teachers can facilitate a supportive learning process and develop students' social and emotional skills.

In addition, the role of teachers in utilizing technology is also very important. In today's digital era, the use of technology in education has become an unavoidable aspect. In the papers we have discussed earlier, it was found that teachers who have the knowledge and skills in integrating technology into learning can improve the efficiency and effectiveness of learning. Support provided to teachers in terms of training and adequate technology resources also have a positive impact on teachers' ability to utilize technology optimally. In addition, teachers also play a role in providing motivation and emotional support to students. Through positive interpersonal interactions and good relationships between teachers and students, teachers can help students feel motivated, confident, and excited about learning. Previous studies have shown that strong teacher-student relationships can improve student participation, attendance, and achievement. In the context of professional development, teachers also have an important role in developing their skills on an ongoing basis. Previous studies have emphasized the importance of continuous training and professional development for teachers in improving the quality of learning. Teachers who have access to training and professional development opportunities can continuously hone their skills, adopt best practices, and keep up with the latest

developments in education. To achieve optimal learning efficiency and effectiveness, the role of teachers cannot be ignored. They have a major influence on students' learning experiences, including improved achievement, motivation, participation, and social and emotional skills. Through technology integration, adaptive learning approaches and continuous professional development, teachers can fulfill their roles more effectively and improve learning outcomes.

The Role and Use of Tablet Computers in Optimizing Student Learning

The teacher's role in the use of tablet computers in an eLearning context is crucial in optimizing students' learning experience. In this narrative, we will develop the role of teachers in the use of tablet computers, explain the advantages and challenges of eLearning, explore student learning outcomes, and relate it to the influence of locus of control and theory of planned behavior. We will also relate it to the discussion results from previous papers. The use of tablet computers in learning has opened new opportunities for teachers to engage students interactively and deeply. Teachers act as facilitators who guide students in using this technology effectively. In previous papers discussing the use of tablet computers in an educational context, it was found that teachers who can integrate this technology into the curriculum and teaching methods can increase student motivation, engagement, and interest in learning. One of the advantages of using eLearning through tablet computers is better accessibility to learning resources. Teachers can provide interactive digital learning materials, learning videos, and relevant educational applications. In previous papers, research has shown that the use of tablet computers can improve students' access to information, facilitate independent learning, and expand the scope of learning outside the classroom.

However, the use of eLearning also faces some challenges. One of them is the uneven accessibility of technology among students. Not all students have access to tablet computer devices and stable internet connection at home. In previous papers discussing the digital divide, it was found that this challenge can limit students' participation in eLearning. Therefore, the role of teachers in ensuring equitable accessibility and providing learning alternatives for students who do not have access to technology is important. In the context of student learning outcomes, the teacher's role in the use of tablet computers becomes a key determinant. Teachers must have the ability to observe and evaluate students' learning progress using such technology. In previous papers discussing the measurement of learning outcomes, it was found that teachers who can utilize learning outcome data obtained from tablet computers can identify individual student needs, provide timely feedback, and adjust teaching strategies to improve learning outcomes.

Furthermore, the influence of locus of control and theory of planned behavior also play a role in the use of tablet computers in learning. Locus of control refers to students' belief in their ability to control their own learning outcomes. Teachers can play a role in developing internal locus of control in students through providing appropriate encouragement, praise, and rewards. In previous papers discussing motivation and the influence of locus of control, it was found that teachers who can build a positive locus of control can increase students' intrinsic motivation in using tablet computers and increase their independence in learning. The theory of planned behavior is also relevant in the use of tablet computers in learning. Teachers can design clear learning objectives, provide structured instructions, and facilitate appropriate modeling and practice. In previous papers discussing lesson planning and behavioral theory, it is found that teachers who apply the principles of planned behavior theory can improve students' skills and achievement in tablet computer use. To achieve effective tablet computer use in learning, the role of the teacher is crucial. In previous papers, research has highlighted the importance of the teacher's role as facilitator, observer, and assessor in the use of this technology. Teachers who have the knowledge, skills and understanding of tablet computer use can help students develop digital capabilities, improve learning outcomes, and achieve the desired learning objectives.

Opportunities and Challenges in the Use of Tablet Computers in Learning

The use of tablet computers in learning provides significant opportunities for teachers and students. Teachers can utilize this technology to create interactive and immersive learning experiences. These advantages include increasing student motivation, engagement, and interest in learning. In addition, better accessibility to learning resources is also a major advantage, where teachers can provide interactive digital learning materials, learning videos and relevant educational applications. The use of tablet computers also expands the scope of learning beyond the classroom, facilitates self-directed learning, and increases students' access to information.

However, the use of eLearning through tablet computers also faces challenges that need to be addressed. One of them is the technology accessibility gap among students. Not all students have equal access to tablet computer devices and stable internet connection at home. This digital divide can limit students' participation in eLearning and strengthen the learning outcome gap. Therefore, the role of the teacher becomes critical in ensuring equitable accessibility and providing learning alternatives for students who do not have access to technology. Teachers must create an inclusive environment that considers the diversity of technology accessibility.

Possible Strategies

To optimize the use of tablet computers in learning, teachers need to adopt several strategies that have been reviewed in previous papers. First, teachers should be able to utilize the learning outcome data obtained from tablet computers to identify students' individual needs. With a deep understanding of students' learning progress, teachers can provide timely feedback and adjust teaching strategies to improve learning outcomes.

Furthermore, the teacher's role in developing students' internal locus of control is important. Through appropriate encouragement, praise and rewards, teachers can build students' intrinsic motivation in using tablet computers and increase their independence in learning. Teachers should inspire students to take control of their own learning outcomes and feel confident in overcoming challenges. In addition, the application of the principles of the theory of planned behavior can also improve the effectiveness of using tablet computers in learning. Teachers need to design clear learning objectives, provide structured instructions, and facilitate appropriate modeling and practice. Thus, teachers can help students develop the necessary skills and improve their achievement in the use of tablet computers. To achieve effective use of tablet computers in learning, teachers must continuously develop their knowledge, skills and understanding of this technology. They need to engage in relevant training and professional development, as well as collaborate with peers to exchange experiences and best practices in the use of tablet computers in learning contexts. With an effective teacher role, the use of tablet computers in learning can present tremendous opportunities for students. Advantages in the use of eLearning through tablet computers, such as increased student motivation, better accessibility of learning resources, and development of students' digital skills, can be achieved. However, challenges such as the technology accessibility gap must also be addressed in an inclusive and sustainable manner. Thus, strategies to be undertaken by teachers include the utilization of learning outcome data, the development of an internal locus of control in students, the application of the principles of the theory of planned behavior, and the development of teachers' knowledge and skills in the use of tablet computers. With a comprehensive and collaborative approach, the role of teachers can be the key to success in optimizing the efficiency and effectiveness of learning using tablet computers in the context of eLearning.

Importance of the role of teachers, competency-based education, innovative learning strategies, effective education programs, policy development, improving accessibility of education, curriculum development, eLearning strategy development, improving education quality

In the context of competency-based education, the role of teachers is the main key in optimizing student learning. Teachers have the responsibility to develop students' competencies in accordance with the evolving needs of the times. In previous papers discussing competency-based education, it was found that teachers who can implement innovative learning strategies can facilitate the holistic development of student competencies, including knowledge, skills, attitudes, and values.

Innovative learning strategies involve active, collaborative, creative and reflective approaches: Teachers can use learning methods such as group discussions, problem-based projects, simulations, and the use of relevant educational technology. In previous papers discussing innovative learning strategies, it was found that teachers who apply this approach can improve student motivation, participation, and learning outcomes. In addition, it is also important to develop effective educational programs. An effective education program involves careful planning, good implementation, and continuous evaluation. Teachers need to have a deep understanding of students' needs, develop clear learning objectives and design relevant learning experiences. In previous papers discussing effective education programs, it was found that teachers who can develop and implement effective education programs can improve student achievement and produce significant learning outcomes.

Education policy development is also an important factor in improving the quality of education. Education policies that favor improving the quality of education need to be supported by a deep understanding of current educational needs and challenges. In previous papers discussing education policy development, it was found that policies that support teacher development, relevant curriculum development and appropriate utilization of educational technology can bring positive changes in the education system. Improving the accessibility of education is also an important factor in achieving equitable and inclusive education quality. Not all students have equal access to quality education. Therefore, policies and efforts are needed to improve the accessibility of education for all students, including students with special needs, students from poor backgrounds and students living in remote areas. In previous papers on improving educational accessibility, it was found that efforts to improve educational accessibility can help reduce educational disparities and improve student participation and achievement.

Furthermore, curriculum development that is relevant to the needs of the times and student development is also an important factor in improving the quality of education. A flexible, inclusive, and relevant curriculum can help students develop the competencies needed in today's digital era. In previous papers discussing curriculum development, it was found that teachers who can develop a curriculum that is oriented towards developing student competencies can improve the quality of learning and the relevance of education. In the face of technological developments and changes in the learning paradigm, the development of eLearning strategies is important. Teachers need to utilize educational technology wisely and integrate it into learning practices. In previous papers discussing eLearning strategies, it was found that teachers who can develop innovative eLearning strategies can increase student engagement, enable self-directed learning, and provide enjoyable learning experiences.

IV. Conclusion

In the context of discussions on the role of teachers, the use of tablet computers in education, the benefits and challenges of eLearning, student learning outcomes, the influence of locus of control and theory of planned behavior, and the development of educational policies and strategies, it can be concluded that the role of teachers is crucial in optimizing the efficiency and effectiveness of learning. Teachers become an important link between technology and students and have the responsibility to facilitate the effective use of tablet computers in the learning process.

In the previously discussed papers, it was found that the use of tablet computers in learning has great potential in improving students' motivation, engagement, and learning outcomes. Teachers who are able to integrate this technology into the curriculum and teaching methods can create an interactive and immersive learning experience. However, the use of eLearning is also faced with several challenges, such as uneven accessibility of technology among students. This emphasizes the importance of the teacher's role in ensuring equitable accessibility and providing learning alternatives for students who do not have access to technology.

In the context of student learning outcomes, teachers have a central role in observing and evaluating student learning progress using tablet computers. Teachers who can utilize learning outcome data obtained from this technology can identify individual student needs, provide timely feedback, and adjust teaching strategies to improve learning outcomes. Furthermore, the influence of locus of control and theory of planned behavior also play a role in the use of tablet computers in learning. Teachers can build a positive locus of control in students through providing appropriate encouragement, praise, and rewards. The principles of the theory of planned behavior can also assist teachers in designing clear learning objectives, providing structured instructions, and facilitating appropriate modeling and practice.

To achieve effective use of tablet computers in learning, the teacher's role as facilitator, observer and assessor becomes very important. Teachers who have the knowledge, skills and understanding of the use of tablet computers can help students develop digital capabilities, improve learning outcomes, and achieve the desired learning objectives. The whole discussion emphasized the importance of developing education policies that support the use of technology in learning, increasing the accessibility of education for all students, developing relevant curriculum, and innovative eLearning strategies. In the previous papers, it was found that these policies and strategies can have a positive

impact in improving the quality of education and creating an inclusive and competency development-oriented learning environment. In conclusion, teachers play a central role in optimizing the efficiency and effectiveness of learning by utilizing tablet computer technology and innovative learning strategies. It is important for teachers to understand and develop skills in integrating technology, actively engaging students and utilizing learning outcome data to improve learning quality. With the development of appropriate policies and strategies, as well as collaboration between all education stakeholders, the quality of education can be continuously improved to create a better future for future generations.

Managerial implications: There is a need for teacher training and development: Education managers need to provide training and development that enables teachers to master the use of tablet computers in learning. This includes an understanding of technology, curriculum integration, learning outcomes data analysis and innovative teaching strategies. This training and development will prepare teachers to face the challenges and capitalize on the opportunities that come with using tablet computers. **Development of education policies that support the use of technology:** Education managers need to develop policies that encourage the use of tablet computers in education, while ensuring equitable accessibility for all students. Such policies should also consider adequate technology infrastructure, provision of digital learning resources and assessment of learning outcomes relevant to the use of technology. **Collaboration between education institutions and stakeholders:** Education managers need to encourage collaboration between education institutions, teachers, students, parents, and other relevant parties. This collaboration will help in better understanding the use of tablet computers, sharing best practices, and creating a learning environment that supports the development of student competencies.

Theoretical Implications: **Development of technology-based learning theory:** Discussions on the use of tablet computers in learning can encourage the development of new theories in the field of technology-based learning. These theories will combine traditional learning concepts with technological aspects such as interactivity, accessibility, and the use of learning outcome data. **Development of motivation theory in the context of technology:** The use of tablet computers in learning can provide new insights into student motivation in the context of technology. Existing motivation theories can be further developed to understand how the use of tablet computers can affect students' intrinsic and extrinsic motivation in learning. **Application of the theory of planned behavior in the use of technology:** The use of tablet computers in learning can contribute to the application of the theory of planned behavior. Teachers can design clear learning objectives, provide structured instructions, and use technological features to facilitate effective modeling and practice. These theoretical implications will enrich our understanding of technology-based learning, student motivation, and the influence of planned behavior in the context of tablet computer use. It can also serve as a foundation for further research and the development of educational theories relevant to the digital age.

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