

The Current Status of Applying Technology to Students' Personalized Learning Activities



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ABSTRACT: Personalized learning is an inevitable trend in the Industrial Revolution 4.0, helping learners develop according to programs that suit their individual needs and abilities. In Vietnam, the application of technology to personalized learning still has many limitations in that traditional teaching methods are still popular, teachers have not been trained in-depth in educational technology, and the learning management system (LMS) has not reached the optimal level. In addition, the technology infrastructure is not synchronous, the ability to exploit data in assessing learning costs is still low, and the gap in technology proximity between regions is still a major barrier. This study analyzes the implementation of technology research applications in personalized learning in Vietnam, points out the main formulas and offers solutions to improve teaching effectiveness.

KEYWORDS: Personalized learning, educational technology, Vietnam.

1. INTRODUCTION

Personalized learning methods have appeared for a long time by adjusting teaching activities and lecture content to suit the circumstances and abilities of each learner, which is the goal of educators. Especially in the current 4.0 era, the application of information technology is widely applied in many countries around the world, including Vietnam.

Personalized learning theories supported by technology are inspired by the progressive era of the last century. According to author John Dewey, personalized learning theory highlights the role and significance of the "learner-centered" learning model, learning society culture. expanding the curriculum and adapting to a changing world (Dewey, 1915;1998). The US National Academy of Engineering has identified Personalized Learning (PL) as one of the "Grand Challenges" of the 21st century (Ellis, 2009), emphasizing the importance of building personalized learning experiences based on factors such as background knowledge, motivation, goals, interests, and literature; to increase engagement and learning performance. The US Office of Education (2010) conducted the study "Transforming American Education: Technology-Enabled Learning" a revolutionary initiative to reshape the education system through modern technology.

Meanwhile, Jennifer S. Groff (2017) focused on analyzing the current status and potential of Personalized Learning (PL) in modern education. Groff emphasized the role of technology such as artificial intelligence and digital platforms that not only promote but also challenge personalized learning such as: lack of uniform standards, difficulties in evaluating effectiveness, and data security issues, etc.

Personalized learning, especially when supported by technology (PL), is emerging as a potential method to improve academic achievement. Lee et al. (2018) pointed out important technological functions to promote personalized learning, allowing customized instruction to suit individual needs and preferences. Although early studies were limited in data (Shemshack & Spector, 2020; Lee et al., 2021), recent studies show positive trends, such as the use of digital tools being associated with better learning outcomes (Zhang et al., 2020). Intelligent tutoring systems (ITS) have also shown significant positive effects compared to traditional methods (Kulik & Fletcher, 2016; Ma Junye et al., 2014). A systematic review by Van Schoors et al. (2021) also reinforces this trend. However, much of the research focuses on specific tools rather than technology-supported personalized learning as a comprehensive approach (Lee et al., 2021). Overall, although more extensive research is needed, early evidence suggests that

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when implemented effectively, technology-supported personalized learning can have a positive impact on academic achievement by promoting a student-centered approach and incorporating optimal teacher support.

Charles M. Reigeluth (2017) emphasized the pivotal role of technology in promoting learner-centered education, especially personalized information and optimizing the learning experience. The introduction of the Personalized Integrated Education System (PIES) is a testament to the effort to enhance personalization in learning. At the same time, Schmid, R. & Petko, D. (2019) emphasized that educational technology is most effectively integrated in student-centered learning environments, where students not only develop digital skills but also strengthen their confidence in using technology, enabling students to take more control of their learning journey than in traditional methods. Schmid and Petko (2019) shed light on both the potential and challenges of educational technology in promoting personalized learning.

Current studies such as those of Assoc.Prof.Dr. Ton Quang Cuong (2020), Tran Thi Thu Huong (2022), Duong Thi Thu Thuy (2023) have just pointed out that challenges in technology, teaching methods and novelty still hinder effective implementation. This requires synchronous and appropriate solutions to optimize the potential of personalized learning to meet modern educational needs and meet the needs of modern society.

A successful technology-supported personalized learning initiative has the following characteristics:

- Students' interests and abilities are engaged in authentic, hands-on activities that promote learning of content area standards.
- Teachers take on the role of instructors and coaches in the classroom rather than as centers of knowledge transmission.
- Students take control of the learning paths they take to achieve their goals, building autonomy, critical thinking, and creativity skills.
- Technology allows learners to make choices about what they learn, how they learn it, and how they demonstrate their learning. Formative assessments throughout the learning cycle, supported by digital tools, help teachers and learners address weaknesses and build on strengths.
- Progress through course content is measured by demonstrating proficiency in defined skills and understandings.
- Technology is integrated throughout the learner's learning process to facilitate learning and thereby promote motivation, increase outcomes and learner happiness.

2. CURRENT SITUATION

The current teaching and learning process is facing many challenges from a technological perspective such as: high requirements for digital literacy and digital literacy for teachers and learners - who are "digital citizens"; strong changes in the nature, methods (models) and outputs of training programs, "learner value chains"; greater expansion and flexibility in space and time, and digital-based learning environments.

The forecast of the development trend of education technology in the coming years shows that the global market size is estimated at USD 142.37 billion in 2023 and is expected to grow at a CAGR of 13.4% from 2024 to 2030.¹ Education technology is developing mainly in the direction of increasing smart devices and seamless internet connectivity along with the growing awareness of the benefits and advantages of integrating technology in the field of education and teaching worldwide. Learners are increasingly turning to e-books that can be accessed online from anywhere in the world.

In particular, in the past few years, there has been a strong trend of shifting from traditional test-based education methods to personalized and interactive teaching orientation. The digitalization and digital transformation process is increasingly penetrating the education sector with technologies used to provide products, educational activities, knowledge and skills to apply technological solutions and innovation. Through that, the application of technology in teaching and learning has strongly supported and promoted learners' learning activities, becoming a regular, continuous, anytime, anywhere, lifelong learning process. At the same time, digital education is also expected to develop strongly with many beneficiaries across geographic regions, ages and socio-economic conditions of all learners.

Currently, universities in Vietnam have gradually allowed students to choose their own learning methods and methods that suit them. Distance education is gradually becoming a trend chosen by many Vietnamese students. According to the General Statistics Office, in Vietnam in the 2019-2021 school year, there were 1.8 million students studying remotely. Before the Covid-19 pandemic, according to the Ministry of Education and Training, the rate of students studying online in Vietnam in 2015 was only 16%, however, in 2020, when the pandemic broke out, this rate increased to 61%. According to a report by UNESCO, on April 9, 2020, more than 1.5 billion students worldwide were affected by the Covid-19 pandemic and had to study remotely. According to Forbes, distance learning is taking place not only at universities, but also at the elementary and secondary levels, with more than

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30 million students in the US. According to a report by the firm ResearchAndMarkets, the distance learning market is expected to grow by 18.2% in the period 2020-2025, becoming one of the fastest growing markets in the education sector. In the current technology era, personalized learning, especially after the world experienced the Covid 19 pandemic, flexible online learning has become a popular trend of modern life. Similarly, Vietnam is also witnessing a significant growth in the number of students choosing to study online over the years. According to a report from the Ministry of Education and Training, the rate of online learning of Vietnamese students over the years has increased significantly. For example, in 2015, only 16% of students chose to study online, however, with the development of personalized learning methods supported by technology, this rate has increased significantly, with a breakthrough in 2020 when the online learning rate increased to 61%. And in 2021, due to the impact of the Covid-19 pandemic, the online learning rate of Vietnamese students has surpassed 75%.

On the other hand, educational technology is also expected to play an important role in creating jobs for future generations. Global education is shifting towards learner-centered and technology-based inclusive learning (better serving learners with special needs).

Main challenges of Vietnamese education:

- Traditional teaching methods have not been innovated, still focusing on one-way knowledge transfer, not encouraging students to actively learn. Lecturers rarely use technology to personalize teaching content and methods.

- Testing and evaluation are mainly based on scores, not taking advantage of learning data to personalize the learning path. Feedback and personal guidance have not been implemented scientifically and effectively.

- The application of technology in learning is still limited: The learning management system (LMS) is not optimized, lacking interactivity and personalization support. Educational technology has not been deployed evenly among schools, affecting students' accessibility.

- Technology infrastructure has not met the needs of implementing personalized learning. There is no clear strategy for digitizing higher education, leading to limited personalization.

- Students have few opportunities to study flexibly, customized according to their personal abilities and interests. Some schools have made strides in personalized learning, but they are still tightly controlled, limiting learner autonomy.

3. SOLUTIONS

Through the global and Vietnamese context of technology applications, it is evident that personalized learning integrated with technology brings significant changes compared to traditional classrooms. Moreover, it cannot be denied that personalized learning with technology plays an essential role not only in developed countries but also in those with lower levels of development. To apply the personalized learning model integrated with technology effectively, the following concrete and clear measures are necessary:

Firstly, the personalized learning model with technology needs to be scientifically organized and systematically arranged to align with the needs of both learners and instructors. This requires considerable effort from all parties involved to ensure the model's successful implementation in practice.

Secondly, a step-by-step plan should be developed for schools to apply technology: organize technology training classes for motivated individuals, especially for senior managers and instructors; build a civilized and healthy learning environment, empowering learners to make choices based on their interests and strengths; enhance learners' capabilities; develop and improve software systems and infrastructure; and build a team with high professional skills ready to provide support.

Thirdly, public awareness of personalized learning with technology should be enhanced to help people embrace technology in their own learning environments. This is crucial because adaptation allows learners to improve their learning outcomes and explore their personal interests through the available environment.

Fourthly, schools should collaborate, share, and work together with the Ministry of Education to develop software systems that best meet the needs of learners, given the diverse age groups and skill levels. Therefore, the system must be user-friendly, accessible to all, and inclusive of everyone.

Fifthly, each teacher should regularly update the current trends in the learning environment, proactively build a learning path suitable for their target students. Additionally, there should be training courses for teachers on how to design effective learning processes that lead to the desired outcomes.

4. CONCLUSION

It is clear that the application of technology in personalized learning plays a vital role in education. However, further efforts are required for its development. As each individual has unique qualities and talents, this necessitates a diverse education system that fully addresses their needs and understands the challenges they face. Additionally, this system must have clear objectives

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and indicators that meet the demands placed on learners, such as social skills and professional expertise. Society can only truly progress when individuals are fully supported and experience happiness in their lives. This is when they can sustain themselves through stable jobs and fair wages. Therefore, the development of a widely applied technological system is essential, but it must be carefully planned step by step to ensure that learners achieve the highest possible outcomes.

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