SEVERAL MODERN TEACHING AND LEARNING MODELS IN THE ERA OF DIGITAL TRANSFORMATION

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Abstract: Digital transformation significantly impacts the education sector for consciousness. This paper helps teachers and learners in training institutions choose learning and teaching models and specifies how these models are chosen and their impacts. It mentions the main models analyzed: Blended Learning, Flipped Classroom, and Project-Based Learning. The author analyzes some modern teaching and learning models in the digital transformation era, helping teachers and learners in training institutions choose learning and teaching models, improve teaching quality, and keep up with the trend of the times.

Keywords: Digital transformation in education, Modern teaching methods, Blended learning, Flipped classroom, Technology-enhanced learning.

1. Introduction

In the context of the digital transformation era taking place strongly, information and communication technology has been changing the way people access knowledge and develop their capacity. The education sector, as the foundation of social development, cannot stand outside this trend. Traditional teaching and learning models have revealed many limitations in meeting the needs of personalized learning, enhancing learning experiences, and preparing learners for a rapidly changing world [1].

Modern human life cannot be separated from technology in all aspects. Education is no exception. If we compare the teaching and learning of this century with the previous century, the difference is very clear. It can be seen that these changes have increasingly influenced and impacted traditional teaching methods. Each teacher and learner must continually learn and apply new concepts in their work to keep pace with social development and avoid falling behind. However, it is necessary to identify that traditional teaching methods are still important. Innovation does not mean eliminating but creating a combination of tradition and modernity to both limit the disadvantages and improve the effectiveness of each teaching method. Therefore, changing the way of teaching and learning in a new education, in the world of technology, is a vital task in the current period [2]-[4].

However, the application of these models also poses many challenges. Issues such as the gap in access to technology, the lack of digital skills of both learners and teachers, as well as the adaptability of the traditional education system are major barriers. Therefore, researching,

applying and perfecting modern teaching and learning models is not only an urgent need but also a strategic direction for the future of education in the digital transformation era. With that foundation, this article will focus on clarifying the nature of the digital transformation era, the impact of digital transformation on current teaching and learning, and the orientation of teaching and learning in the digital transformation era, managing change in schools before the digital transformation era, the impact of the digital transformation era on teaching and learning, some modern teaching and learning models in the digital transformation era and proposing solutions to optimize implementation in the context of Vietnamese education.

2. Content

2.1. Research history

2.1.1. Phase 1: Traditional education and the emergence of digital technology

Before the digital transformation era, education was primarily based on traditional in-class teaching, with teachers as the central figures. However, since the late 20th century, the development of information technology and the internet has opened new research directions on technology applications in education.

In the 1990s, early research on educational technology focused on using computers, teaching support software, and Learning Management Systems (LMS). In the early 2000s, the rise of e-Learning platforms like Blackboard and Moodle further promoted research on learning methods that did not require physical classroom attendance.

2.1.2. Phase 2: The development of modern teaching and learning models

a) Blended Learning Model: Emerging in the early 2000s, Blended Learning combines traditional in-person instruction with online learning. Early studies focused on assessing the effectiveness of integrating these two approaches, showing that it enhances flexibility and optimizes the learning experience. Since 2010, Blended Learning has become a widely adopted model in higher education and corporate training.

b) Flipped Classroom Model: Popularized in 2007 by educators Jonathan Bergmann and Aaron Sams, this model encourages students to study instructional materials before class and engage in interactive activities during class. Research has shown that this approach fosters critical thinking and student autonomy. Numerous experimental studies comparing Flipped Classroom with traditional methods indicate significant improvements in learning outcomes.

c) Online Learning & MOOCs: The rapid expansion of Massive Open Online Courses (MOOCs) in 2012, through platforms such as Coursera, edX, and Udacity led to increased research on digital content design, online teaching methodologies, student engagement, and learning effectiveness. During the COVID-19 pandemic (2020-2022), Online Learning became the dominant trend, driving further research on learner experience and emerging technologies such as AI and VR in education.

d) Personalized Learning Model: This model gained prominence in the Big Data and AI era. Since 2015, studies have focused on Learning Analytics to tailor educational content to individual learners' needs and abilities. Platforms like Khan Academy and Duolingo have effectively implemented Personalized Learning to enhance user engagement and learning efficiency.

2.1.3. Phase 3: Future research trends

AI and Chatbot applications in education: Research is increasingly focused on utilizing AI for personalized learning, automated assessments, and real-time feedback. Learning in the Metaverse: Emerging studies explore how metaverse environments can create immersive and interactive learning experiences. Blockchain Applications, recent research examines how blockchain technology can enhance academic management and secure digital credentialing.

2.2. Research methods

*   *Theoretical research method:* This method involves reviewing literature, synthesizing, and analyzing previous studies on modern teaching and learning models. It evaluates trends, educational theories, supporting technologies, and teaching effectiveness. Reference materials may include books, scientific articles, conferences, dissertations, and research reports. The analysis-synthesis method is used to examine relevant educational theories such as Constructivism, Behaviorism, and Cognitivism. Additionally, modern educational models like Blended Learning, Flipped Classroom, Personalized Learning, MOOCs, and Game-Based Learning are synthesized. Based on this, theoretical principles and frameworks are proposed for developing digital teaching and learning models.

*   *Expert consultation method:* This method gathers in-depth insights from lecturers, researchers, and educational technology experts. Content analysis is conducted to identify trends and challenges in digital teaching and learning.

*   *Classroom observation method:* Direct observation is carried out to assess the implementation of digital teaching models in educational institutions. Student reactions and their levels of interaction with technology are recorded.

*   *Case study method:* This method involves in-depth analysis of an institution group of students using modern learning models. The impact of technology on learning is evaluated.

*   *Educational technology research method:* Technology simulation and experimentation, this involves testing the feasibility of technologies such as AI, VR/AR, and Chatbots in education. The effectiveness of new technologies is compared to traditional methods. Big Data & AI in Education Analysis, AI is used to analyze learning data from LMS and MOOCs. Machine learning algorithms are applied to personalize learning content.

2.3. The nature of the digital transformation era

2.3.1. Traditional classroom

The traditional classroom is an educational model that has appeared and existed for a long time, characterized by the direct presence of teachers and students in the same physical space. Below are the basic elements that make up the nature of the traditional classroom:

Fixed space and time organization: Traditional classes take place at a specific location with strictly regulated study time. The teacher leads the entire learning process according to a predetermined schedule. Central role of the teacher: In the traditional classroom, the teacher plays a central role as the main source of knowledge. The teaching process is one-way, imparts knowledge, and the students absorb and memorize.

Lecture-based teaching method: The lecture-based method is the core of the traditional classroom, where the teacher explains the lesson content, and the students take notes and practice according to instructions. This form limits the interaction and creativity of the students [2][4]. Assessment based on test results: Assessment in traditional classrooms often focuses on periodic tests or final exams. Assessment criteria are mainly based on the ability to memorize and reproduce knowledge, with little emphasis on critical thinking or practical skills.

Limitations in personalizing learning: Traditional classrooms often apply a common curriculum and teaching methods to all students, with little consideration for differences in abilities, needs, or learning styles of each individual. Advantages and disadvantages: The traditional classroom model has the advantage of being easy to organize, suitable for large scale and effective in ensuring consistency in teaching. It has many limitations in the digital age: lack of flexibility, little two-way interaction, and failure to meet students' needs for personalized learning. This has promoted the transition to modern educational models, where technology plays a supporting role and changes the way of teaching [1]-[3].

2.3.2. Technology classroom

Technology Classroom is an educational model that integrates technology tools and solutions into the teaching and learning process, creating a flexible, personalized and innovative learning environment. Below are the basic characteristics that make up technology classrooms:

First, technology is applied as an intermediary to support teaching and learning. Technology classrooms use devices such as computers, projectors, smart boards, tablets, and smartphones to support teaching and learning. Learning software and platforms: Platforms such as Google Classroom, Microsoft Teams, Zoom, and E-learning software are integrated to organize classes, manage lectures, and two-way communication between teachers and students [1].

Second, technology classrooms enhance interaction. Real-time interaction: Students can ask questions and discuss directly with teachers through support tools such as video calls, chats or online forums. Collaborative learning: Technology classrooms encourage students to work in groups through tools such as Miro, or Padlet, creating a space for creativity and sharing [2].

Third, technology classrooms promote personalized learning. Individual learning paths: Technology classrooms design lessons suitable for each individual based on their learning data. Self-directed learning: Students can proactively access documents, instructional videos, exercises and tests anytime, anywhere through online platforms [3].

Fourth, technology classrooms ntegrate data and artificial intelligence (AI). Learning data analysis: Technology systems collect and analyze each student's learning data, helping teachers develop effective teaching strategies. AI Assists Learning: Artificial intelligence helps create automated tests, recommend appropriate learning materials, and provide timely feedback to learners.

Fifth, learning is not limited by space and time. Technology classrooms allow students and teachers to connect remotely, participate in learning and teaching without being bound by geographical location. This facilitates lifelong learning and global learning.

Table 1. 10 changes in using technology in education

TRADITIONAL TEACHING METHODS	TEACHING METHODS IN THE DIGITAL AGE
- Teacher-centered teaching	- Learner-centered teaching
- Stimulation of only one sense	- Multisensory stimulation
- *One-way development*	- *Multidimensional development*
- One medium	- Multimedia
- *Solitary work*	- *Collaborative work*
- Information transfer	- Information exchange
- *Passive learning*	- *Interactive learning*
- Learning of facts, literacy	- *Discovery and investigation learning*
- *Learner answering questions*	- *Learner-generated problem-solving*
- Isolated and artificial context	- Realistic contexts, real world

Source: Author collected during research.

Sixth, technology classrooms enhance diverse and flexible assessment. Tools such as online quizzes, digital projects, and practical skills tests can be used to comprehensively assess students' abilities instead of relying only on theoretical tests. The advantages of technology classrooms include flexibility, personalized learning and accessibility; They also enhance learning experiences and encourage creative thinking; Furthermore, they reduce pressure on physical space and education costs. The limitations of technology classrooms include the need for technology infrastructure and digital skills from both teachers and students; Another significant limitation is

the risk of imbalance in access to technology between regions; Additionally, an over-reliance on technology may hinder direct communication skills.

2.4. The impact of digital transformation on current teaching and learning

2.4.1. Advantages of the digital transformation era in teaching and learning

(i) Increased flexibility in learning: No space and time limits: Learners can access materials and attend classes from anywhere, at any time, making learning more flexible. Suitable for many subjects: Digital transformation helps busy people, students in remote areas, or people with disabilities access education more easily [3][4].

(ii) Personalized learning path: Individualized learning method: Technology systems are capable of analyzing learning data to design learning paths suitable for each individual, optimizing learning outcomes. Self-study and self-control of progress: Students can learn at their own pace, revisit content that they do not understand, and develop individual skills [5].

(iii) Innovative teaching and learning methods: Highly interactive learning: Technology supports learning formats such as simulation, virtual reality (VR), and augmented reality (AR), helping students learn more visually and practice more effectively. Diverse learning resources: Learners can access a rich repository of resources, including e-books, videos, online lectures, forums, and open courses (MOOCs). Advanced technology-based learning: Artificial intelligence (AI) and data analysis help provide quick feedback, improving understanding [6].

(iv) Enhancing global collaboration and connectivity: Online group learning: Technology allows students and teachers to collaborate via platforms such as Zoom, Google Meet, or Microsoft Teams. International connectivity: Learners participate in global classes, exchange cultures, and learn from advanced educational experiences [1].

(v) Improving educational management efficiency: Learning management system (LMS): Supports teachers in managing classes, assignments, assessing learning outcomes, and tracking the progress of each student. Saving time and resources: Technology helps automate many tasks such as grading, creating schedules, and storing records [2].

(vi) Developing 21st century skills: Digital skills: Learners and teachers develop skills in using information technology, an essential element in the 21st century. Creative thinking and problem solving, technology tools promote critical thinking and apply knowledge to practice.

(vii) Meeting the need for lifelong learning: Technology supports learning at all stages, making it easy for learners to upgrade skills, change careers, or pursue personal interests without being limited by age or time [5]. Digital transformation not only changes the way knowledge is transmitted but also opens up new opportunities for global education. However, to make the most of these advantages, educational institutions need synchronous strategy in skills, support policies.

2.4.2. Challenges of the digital transformation era in teaching and learning

First, there is a gap in infrastructure and access to technology. Infrastructure is not uniform: In many areas, especially remote areas, internet conditions and technology equipment are lacking or unstable. Additionally, purchasing equipment such as computers, tablets, or smartphones is a burden for many families and educational institutions.

Second, the gap in digital skills remains. Lack of technology skills: Both teachers and students need training to be proficient in using online teaching and learning tools. Different adaptability, experienced teachers often have difficulty getting used to new technology.

Third, teaching and learning quality is uneven. Lack of direct interaction: The online environment can reduce the connection between teachers and students, making it difficult to build a positive learning environment. Limitations in controlling learning progress: It is difficult for teachers to accurately monitor and evaluate the level of participation and absorption of students in the digital environment [5][6].

Fourth, information security and safety issues pose significant challenges. Risk of data loss: Storing and sharing learning data on online platforms can easily lead to loss or leakage of personal information. Cyber attacks, digital education systems often face the risk of being attacked by hackers, causing disruption or affecting reputation.

Fifth, learning content and resources are suboptimal. Incomplete digital content: Many learning materials have not been converted to digital format or are not suitable for the online environment. Lack of verification, online content not of guaranteed quality, leading students accessing inaccurate information.

Sixth, digial learning can have negative impacts on health and psychology. Health effects: Long-term online learning can easily cause eye strain, back pain, or health problems due to lack of exercise. Social isolation, lack of direct communication can lead to feelings of loneliness, reducing learners' social skills.

Seventh, appropriate assessment mechanisms are insufficient. Difficulties in online testing, Ensuring transparency and honesty in online tests is a big challenge. Incomprehensive assessment, mainly based on test results, which do not fully reflect students' practical abilities.

Eighth, Over-reliance on technology can lead to various challenges. Lack of autonomous thinking, learners may depend on support tools such as AI, reducing their ability to think independently. Disruption risks: Unstable technology systems, disconnections or software errors can disrupt the learning process.

Nineth, there are challenges related to policy and management. Lack of synchronous policies: Digital transformation implementation in many places is still fragmented, without coordination among stakeholders. High implementation costs: Investing in infrastructure, training human resources and maintaining systems requires large budgets, especially in developing countries.

Thus, the digital transformation era brings many opportunities but also complex challenges. To overcome these obstacles, have the support of governments, schools and social organizations in developing digital skills, and building appropriate digital education policies [3][4][5].

2.5. Orientation of teaching and learning in the digital transformation era

In the context of strong digital transformation, education needs strategic orientations to maximize the benefits of technology, while addressing the challenges.

Innovation in teaching and learning methods: Shift from traditional teaching to active learning: Teachers play a guiding role, supporting students in developing thinking, problem-solving skills and creativity instead of just imparting knowledge.

Applying advanced teaching models: Online learning (E-learning), blended learning (Blended Learning), flipped classroom (Flipped Classroom), and project-based learning (Project-Based Learning) can be combined to improve learning effectiveness [5].

Developing digital and relevant learning content: Digitizing learning materials, it is necessary to develop digital learning resources such as e-books, video lectures, and interactive exercises for students to easily access educational content.

Designing flexible content: Learning content needs to be personalized, suitable for each student based on their abilities and interests. Enhancing interdisciplinary integration, lessons that combine different fields should be built, helping students clearly see the connection between theoretical knowledge and practical applications [6].

Developing digital skills for teachers and students: Digital skills training, courses should be organized to help teachers and students proficiently use technology tools and applications in teaching. Encouraging creative and innovative thinking: Critical thinking, creativity and adaptability to the digital environment should be developed.

Enhancing the application of technology in teaching: Applying artificial intelligence, AI should be used to personalize learning, analyze learning data and provide quick feedback to students. Virtual reality (VR) and augmented reality (AR), these create an intuitive, vivid learning environment, helping students easily grasp complex knowledge. Learning management system (LMS), platforms such as Google Classroom can be deployed to organize classes, manage assignments and evaluate learning outcomes [2].

Building a flexible and comprehensive learning environment: Learning anytime, anywhere, it is essential to develop online learning platforms that allow students to access learning resources and participate in remote classes. Promoting lifelong learning: It is necessary to building an education system that supports learners of all ages, encourages skill improvement and adapts to change. Enhancing collaboration: Technology should be used to connect learners globally, creating opportunities for knowledge and cultural exchange [4].

Investing in and developing technology infrastructure: Building modern technology infrastructure, High-speed internet, adequate technology equipment and synchronous software platforms need to be ensured for educational institutions. Narrowing the digital gap, disadvantaged areas should be supported to access technology through policies to provide internet equipment and services.

Innovating assessment and testing methods: Shifting from theoretical testing to competency assessment, the focus should be on measuring practical skills, problem-solving ability and knowledge application. Diversify assessment methods, online tests, real-life projects, and group assignments should be used to comprehensively reflect learners' abilities [4].

International cooperation and global education development: Connecting with international educational organizations: It is important to share experiences, learn advanced educational models and participate in global cooperation programs. Developing globalized learning programs: Educators should integrate cultural, economic and scientific elements of the world into domestic educational programs. Educational orientation in the digital transformation era needs to ensure flexibility, creativity and fairness, while maximizing the potential of technology to create an effective and comprehensive learning environment. These strategies not only help improve the quality of education but also prepare learners to adapt to the volatile future world [5][6].

2.6. Managing change in schools in the era of digital transformation

The era of digital transformation is posing urgent requirements for innovation in the way schools are organized, operated, and managed. Managing change is not only about adapting to new technology but also requires adjustments in strategy, people, and school culture.

* Developing a digital transformation vision and strategy: A clear vision is essential. The leadership needs to define the goals and benefits of digital transformation for the school, linked to the long-term educational mission. Besides, an implementation plan should be developed outlining a detailed roadmap, specific goals for each stage, and necessary resources. Comprehensive integration is key, meaning digital transformation should be embedded into all areas from teaching, learning, administrative management, to support activities [5].

* Developing teachers and staff: Digital skills training should be done by organizing courses and workshops to improve technology capacity for teachers and administrative staff. It is essential to encourage innovative thinking by building a culture of learning, adapting to change, and creatively applying technologies in practice. Support policies can be introduced to encourage teachers to experiment and apply new teaching methods based on technology.

* Improving technology infrastructure: Digital infrastructure can be built by investing in internet networks, technology equipment, and software platforms to support educational activities. Education management systems (EMS) can be deployed to manage student, teacher, and school data information to optimize workflows. Technology synchronization is essential to

ensure all tools and software are integrated and compatible with each other to optimize performance [10].

* *Managing culture and changing perceptions:* Building a Digital Transformation Culture, tt is important to create an environment that encourages experimentation, innovation, and learning from failures in the process of adopting new technologies. Reducing Resistance, consensus should be built by clearly explaining the benefits, listening to opinions, and supporting groups that have difficulty adapting. Promoting collaboration, it is essential to promote exchanges between departments and individuals within the school to share experiences and knowledge.

* *Integrating lifelong learning into the education model:* It is necessary to encourage continuous learning, build educational programs that support students, teachers, and the entire learning community regardless of age. Up-skilling is important, ensuring that the skills and knowledge imparted are relevant to the needs of the digital labor market [9]. Managing change in schools requires a holistic approach that combines technology, people and culture. The success of digital transformation depends not only on the application of technology, but also on the collaboration and adaptation of all stakeholders. Schools need to become places that encourage innovation, continuous learning and ready to adapt to future changes.

2.7. The impact of the digital transformation era on teaching and learning

* *On the positive side, improving the effectiveness and quality of education: First,* personalized learning, flexible content, technology helps design individual learning paths that meet the individual needs and abilities of each student. AI and data analytics: Learning data analytics tools help teachers evaluate and adjust teaching methods more appropriately. *Second,* digital transformation expands educational access by enabling learning anytime and anywhere. Thanks to online platforms, students can study anywhere, anytime. It also removes geographical barriers as students in remote areas can access high-quality educational resources and teachers [5][6]. *Third,* It enhances interaction and learning experience with applications such as Kahoot, Quizizz, or digital interactive whiteboards, making lessons more engaging. Virtual and augmented reality provides immersive learning experiences, helping students easily understand complex concepts. *Fourth,* it saves time and resources and technology helps automate administrative tasks such as grading, student management, and reporting. Digital learning materials reduce the need to print documents, save costs and protect the environment [1][2][3].

* *Some emerging challenges and difficulties:* The first challenge is the digital divide and educational inequality in technology infrastructure. Not all students and teachers have access to devices and the internet. Providing learning devices is a financial burden for many families. The second challenge involves the changing role of teachers and digital skills challenge. Teachers need to be trained to effectively use digital tools and platforms. Teachers risk losing their central role if they rely solely on technology. The third're health and psychological impacts. Prolonged online learning leads to posture and mental health problems. Lack of face-to-face interaction can reduce students' social skills. The fourth are security and information security challenges. The storage and management of student data to prevent abuse or cyberattacks. Students are vulnerable to inappropriate content or becoming targets of cyber threats.

* *Changes in teaching and learning methods:* First, Innovative teaching methods such as Blended Learning, combining online and face-to-face learning, are essential to optimize the experience. Flipped Classroom is another innovative method where students learn the lesson themselves before coming to class and use class time to discuss and solve problems. Second, it is necessary to enhance lifelong learning through flexible learning opportunities: Digital transformation encourages students and teachers to continue learning to keep up with technological developments. Open learning resources such as massive open online courses (MOOCs) provide unlimited learning opportunities.

Digital transformation brings opportunities to improve the efficiency and quality of education, but at the same time, it also poses challenges that require comprehensive preparation and management. Schools, teachers, students, and parents need to adapt and develop together to maximize the benefits of digital transformation in teaching and learning.

2.8. Several promising pedagogical models in the digital age

* Flipped Classroom: Students study lesson content through videos and documents before coming to class. Class time is spent on discussions, doing exercises, or solving practical problems. This enhances students' self-study and initiative. Teachers have more time to support individuals and answer questions. This is suitable for subjects that require analytical thinking, such as Math, Physics, Chemistry, or soft skills subjects. The flipped classroom model has been applied in foreign language teaching for non-language major students at several universities in Vietnam. Students independently study grammar and vocabulary through videos before attending class, then participate in language practice activities such as discussions, role-playing, and group work under the guidance of instructors.

* Blended Learning: This combines offline and online learning. Online learning activities support and supplement classroom lessons. They offer flexibility in learning time and space. By increasing the use of digital learning resources, this promotes the effectiveness of both methods. It is widely used in schools, training centers, and international learning programs. At the Faculty of Vietnamese Studies, Hanoi University, the Blended Learning model has been proposed and gradually implemented. This approach combines in-person teaching with online learning, allowing students to access knowledge more flexibly and effectively. At SIU, Vietnam, the project-based learning method has been effectively applied for many years. Students engage in real-world projects, allowing them to apply theoretical knowledge to develop teamwork skills.

* Project-Based Learning (PBL): Students learn through participating in practical projects. Projects are often long-term, require collaboration, and apply interdisciplinary knowledge. It helps students develop creative thinking and teamwork. It links theoretical knowledge with practical applications. It is suitable for subjects related to science and economics [4], [6].

* Personalized Learning: Learning content is designed according to the abilities, interests, and needs of each student. Using technology such as artificial intelligence (AI) and data analysis to adjust the learning path increases learning efficiency by focusing on individual strengths and improving weaknesses. Students learn at their own pace. It is used in online learning platforms such as Khan Academy, Coursera, or learning management systems (LMS).

* Virtual and Augmented Reality Learning (VR/AR Learning): Virtual reality, augmented reality technology are used to create simulated learning environments in Vietnam universities. This helps students visualize new concepts and learning experiences, enhancing understanding of complex and abstract concepts, and providing real-world experiences without leaving the classroom. Students can explore historical environments, science experiments, or learn foreign languages through simulations.

* Open Learning: Open Educational Resources (OER) are used for students to freely access and learn educational content. Including Massive Open Online Courses (MOOCs) such as Coursera, edX, Udemy, this creates learning opportunities without limits of space, time, and finance, promoting lifelong learning for individuals who want to learn new skills or knowledge outside of the main curriculum.

3. Conclusion

In the digital transformation era, a driving force has been created to promote the development of education and profound changes. The formation of a global market for jobs, capital, technology, and especially information has become a reality. Therefore, Vietnamese education

needs to innovate according to the general trend of the world. Vietnamese education needs to innovate to adapt to the development of science and technology, especially digital technology. The digital transformation era has brought about a wave of strong innovation in the education sector, promoting the emergence of many modern teaching and learning models. These models not only take advantage of advanced technologies but also change the way learners approach knowledge, develop skills, and promote creative thinking. From flipped classrooms, blended learning to project-based learning or personalized learning, each model brings outstanding benefits while solving challenges in meeting diverse learning. Digital transformation is not only a challenge but also an opportunity for education to become more equitable, flexible and innovative, preparing students with solid foundations for the future.

The context of rapid digital transformation, modern teaching and learning models such as Flipped Classroom, Project-Based Learning (PBL), Blended Learning, and Personalized Learning are increasingly proving their importance in enhancing education quality. These models not only leverage digital technology effectively but also create opportunities for learners to develop creative thinking, self-learning abilities, and collaboration skills. The implementation of these models requires a shift in teaching mindset, classroom organization methods, and assessment approaches. Additionally, support from technological infrastructure, flexible education policies, and close collaboration between schools, teachers, students, and parents is essential to maximize their effectiveness. Overall, modern teaching and learning models in the digital transformation era not only enhance the learning experience but also equip learners with essential skills to adapt to a digitized world. Continuing research and improvement of teaching methods will be key to building an advanced education system that meets the evolving demands of society in the future.

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