

Adaptation Solutions for Digital Transformation in School Management Models for Educational Administrators in Vietnamese General Education Institutions

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Abstract: This paper explores adaptation solutions for implementing digital transformation models in school management for educational administrators in Vietnamese general education institutions within the context of globalization and the Fourth Industrial Revolution. The study emphasizes the integration of information technology into management and teaching processes to enhance educational effectiveness, requiring administrators to adopt new mindsets and skills. Surveying 15 schools across various regions, the research assesses the levels and challenges of digital transformation, highlighting limitations in infrastructure, financial resources, and professional training, especially in rural areas. Key solutions include developing digital competency training materials, creating digital management and learning environments, and fostering public-private partnerships to expand technological and educational resources. The findings provide specific directions to support digital transformation, laying a solid foundation for the sustainable development of education in Vietnam in the digital age.

Keywords: Digital Transformation in Education, Digital School Model, Digital Competency of Educational Administrators, Vietnamese General Education, Fourth Industrial Revolution

1. Introduction

Amidst globalization and the Fourth Industrial Revolution, digital transformation has become an inevitable trend across sectors, particularly in education. In Vietnam, this process not only improves educational quality but also fosters a flexible and creative learning environment. The digital school model presents numerous opportunities and challenges for educational administrators at general education institutions.

Digital transformation in education is defined as the application of information and communication technology in management, teaching, and learning to enhance efficiency and improve educational quality (Ministry of Education and Training, 2021). This transformation requires administrators to shift their mindset, skills, and management methods. They must not only be managers but also leaders, guiding and supporting teachers and students in adopting new technologies.

To achieve successful digital transformation in general education, adaptive solutions tailored to Vietnam's specific context and conditions are essential. According to Adams (2021) and Khanh et al., (2023), continuous professional development for teachers and administrators is critical in the digital age. This development not only enhances their technology knowledge but also improves their leadership and management skills within the digital education environment.

The proposed solutions include training administrators in digital skills, establishing appropriate IT infrastructure, developing supportive policies and regulations, and promoting collaboration between schools and communities. Furthermore, according to Đinh Tiến Dũng (2021), a shift in management thinking is essential to meet the new demands of the digital educational environment.

This paper will focus on specific solutions to adapt the digital transformation model for school management by educational administrators in Vietnamese general education institutions, thereby contributing to the sustainable development of education in the digital age.

2. Theoretical Foundation

2.1. The Concept of Digital Transformation in Education

Digital transformation in education refers to the application of digital technology to innovate and improve teaching, learning, management, and the organization of educational activities. This process is not merely about introducing technology into classrooms but rather a comprehensive revolution in how education is designed, implemented, and managed. According to the Vietnamese Ministry of Education and Training (2021), digital transformation in education encompasses the application of information technology to enhance educational quality, improve teaching and learning processes, and create a more positive and flexible learning environment. Ferrari (2013) further notes that digital transformation in education involves the development of digital competence for both teachers and students. Digital competence includes not only the ability to use technology but also critical thinking, problem-solving, and teamwork skills in a digital environment. This requires educational institutions to redesign curricula, teaching methods, and assessment systems to meet the new demands of the digital era. Additionally, Adams (2021) highlights that digital transformation impacts not only learning methods but also the roles of teachers and administrators. They must develop new skills to effectively manage and lead in a digital environment, establishing a solid foundation for sustainable educational development in the future.

Beyond technological benefits, digital transformation in education creates opportunities to build a more inclusive educational system, where every student has access to rich educational resources regardless of geographic location or economic conditions. Hargreaves and Fullan (2020) assert that digital transformation can help bridge educational gaps and promote equity for all students.

2.2. Existing Models of Digital Transformation

Digital transformation in education entails not only the adoption of new technologies but also a profound shift in management, teaching, and learning methods. Currently, several digital transformation models are implemented worldwide, each with unique characteristics and advantages suited to the specific conditions of different nations and regions. Key digital transformation models in education include:

Student-Centric Model: This model emphasizes the role of students in the learning process, with technology tools designed to best meet learners' needs and preferences. Carter and Martin (2018) note that personalized learning is crucial in this model, allowing students to learn at their own pace and style. Online platforms and mobile applications provide learning content and track student progress.

Smart Management Model: This model focuses on applying information and communication technology in school management, improving the operational efficiency of educational institutions. Typically, this model includes student management systems, education management information systems (MIS), and data analysis tools for data-driven decision-making. Hargreaves and Fullan (2020) suggest that technology enables administrators to monitor and assess teaching effectiveness while optimizing management processes.

Blended Learning Model: This model combines online and traditional learning methods, providing flexibility for both students and teachers. According to Anderson and Dron (2011), the blended learning model optimizes time and resources, enabling students to manage their own learning schedules. The popularity of this model has increased, especially during the COVID-19 pandemic.

Open Education Model: This model emphasizes sharing and collaboration in education through open educational resources (OER) and online learning platforms. It allows learners worldwide access to free learning materials, enhancing learning opportunities for all. As noted by Selwyn (2012), this model not only saves costs but also creates equal learning opportunities for students.

Data-Driven Education Model: This model centers on using data to improve teaching and learning processes. Schools utilize data from various sources, including test results, student feedback, and parental input, to make informed decisions regarding curricula and teaching methods. According to Giang et al. (2021), adopting this model enables education managers to make more accurate decisions and enhance educational quality. These digital transformation models benefit individual students and contribute to improving overall educational management and quality. Selecting an appropriate model can help educational institutions in Vietnam effectively implement digital transformation, meeting the new demands of modern education.

2.3. The Role of Educational Administrators in Digital Transformation

Digital transformation in education is a complex process requiring the participation and contributions of multiple stakeholders. Among these, educational administrators play a pivotal role, not only as leaders and strategists but also as implementers of digital transformation strategies and solutions.

Firstly, administrators are responsible for developing and implementing digital transformation strategies for their institutions, including defining specific goals, roadmaps, and methodologies. According to Nguyen Van Hung (2020), having a clear strategy allows educational institutions to prioritize investments in technology and resources, ensuring an efficient transformation process.

Additionally, administrators must create a supportive environment for applying technology in teaching and management, which includes encouraging and enabling teachers and students to become familiar with new technologies. Adams (2021) emphasizes that a supportive environment helps teachers feel more confident using technology and improves their digital skills.

Administrators are also tasked with establishing training programs and professional development for teachers to enhance their ability to use technology effectively in teaching. Dinh Tien Dung (2021) asserts that building digital competency for teachers not only enables effective use of technology but also creates career development opportunities in the digital education environment.

Furthermore, administrators need to regularly monitor and evaluate the digital transformation process within educational institutions. Gathering data and feedback from teachers, students, and parents allows them to identify strengths and weaknesses in implementation. Anderson and Dron (2018) argue that periodic evaluation enables administrators to adjust strategies and methods in a timely manner, ensuring flexibility and effectiveness in the transformation process. Administrators also play a key role in fostering collaboration between teachers, students, and parents by creating platforms and communication channels to share learning resources, experiences, and information on technology applications in education. According to Morris and Stommel (2020), building a learning community enables all stakeholders to grow together and improve teaching effectiveness.

Finally, administrators must adopt modern management methods in a digital transformation environment. Utilizing smart management tools, data analytics, and information technology will enable them to manage educational institutions more effectively while responding quickly to changes in the educational environment. Miller (2019) states that successful digital transformation requires administrators to have an innovative mindset and a willingness to experiment with new methods.

3. Research Methodology

3.1. Research Design

The study employs a mixed-method approach, combining both qualitative and quantitative methodologies to collect and analyze data from multiple sources. The quantitative method enables the measurement of specific factors related to the digital literacy and competency of administrators and teachers. Meanwhile, the qualitative approach provides in-depth insights into the challenges and opportunities within the digital transformation process.

3.2. Data Collection

The data collection and analysis were conducted through the following steps:

Step 1: Selection of Survey Participants

Fifteen general education schools across diverse regions were selected, including Hanoi, Tuyen Quang, Thanh Hoa, Dong Nai, and Ho Chi Minh City. Specifically, this sample consists of 5 primary schools, 5 lower secondary schools, and 5 upper secondary schools. The selection of schools from different geographical areas ensures representativeness, capturing a variety of developmental conditions, technological infrastructure, and the adaptability of administrators and teachers to digital transformation models.

Step 2: Questionnaire Survey

A total of 400 individuals participated in the survey, comprising:

100 experts and researchers: Focused on specialists in education and technology with extensive knowledge of digital transformation and technology applications in teaching.

200 administrators, teachers, and interested parents: Including educational administrators, teachers from primary, lower secondary, and upper secondary levels, as well as some parents interested in digital transformation in education.

100 students: Randomly selected from the participating schools, reflecting student perspectives across different educational levels on digital transformation.

The questionnaire was designed with questions related to:

The digital literacy and competency levels of administrators and teachers.
Challenges encountered in implementing technology and digital transformation.
Student perspectives on the application of technology in learning.

Step 3: In-depth Interviews and Field Observations

To supplement the quantitative data, in-depth interviews were conducted with 10 experts and 10 administrators from general education schools to gather specific insights and evaluations on adapting to the digital transformation model. Field observations were also carried out at 3 schools to directly assess the state of technological infrastructure, implementation capabilities, and the level of engagement of administrators, teachers, and students with new technologies. Through these steps, the study aims to gather reliable and comprehensive data on the digital transformation process within general education in Vietnam.

4. Research Results

This study conducted surveys and analyzed data from 15 schools located in Hanoi, Tuyen Quang, Thanh Hoa, Dong Nai, and Ho Chi Minh City, covering primary, lower secondary, and upper secondary levels. The objective was to evaluate the extent of digital transformation implementation and the challenges encountered. The main findings are presented below:

Levels of Digital Transformation Implementation in Educational Institutions

Table 4.1: Percentage of Digital Transformation Implementation Levels in Schools

Implementation Level	Experts and Researchers (%)	Managers and Teachers (%)	Students (%)
Comprehensive	20%	25%	15%
Partial	65%	60%	75%
Not Implemented	15%	15%	10%

Comprehensive (20-25%): Schools in this category have fully integrated digital technology across all areas of management and teaching. These schools are mostly located in urban areas where infrastructure and digital skills are more advanced.
Partial (60-75%): Most schools fall into this category, using technology for specific aspects, mainly student management and online teaching.
Not Implemented (10-15%): This group mainly includes schools in rural areas, where infrastructure is limited and resources are scarce.

Areas of Digital Technology Application in Schools

Table 4.2: Areas of Digital Technology Application in Schools

Area of Application	Experts and Researchers (%)	Managers and Teachers (%)	Students (%)
Student Management	50%	55%	45%
Online Teaching	30%	35%	40%
Financial Management	20%	10%	15%

Student Management (45-55%): This is the most digitized area, with software used for tracking student records, grades, and related activities.
Online Teaching (30-40%): Driven by COVID-19, online teaching has seen increased adoption, though significant differences persist between urban and rural schools due to infrastructure disparities.
Financial Management (10-20%): This area has the least digital application due to the lack of comprehensive systems and specific guidelines from upper management.

Digital Skills and Knowledge Levels of School Managers

Table 4.3: Digital Transformation Knowledge Levels among Managers

Digital Transformation Knowledge Level	Number of Managers	Percentage (%)
Proficient	60	30%
Basic Understanding	90	45%
Facing Difficulties	50	25%

Analysis reveals that managers in urban areas demonstrate higher proficiency, while those in rural areas face more challenges in adapting to digital transformation.

Key Challenges in Digital Transformation Implementation

Table 4.4: Challenges and Obstacles in the Digital Transformation Process

Challenge or Obstacle	Number of Respondents	Percentage (%)
Lack of Technological Infrastructure	195	65%
Limited Financial Resources	180	60%
Insufficient Digital Technology Training	165	55%
Limited Time for Implementation	150	50%
Lack of Support from Higher Authorities	135	45%
Difficulty in Changing Mindset	120	40%

Most rural schools struggle to meet digital transformation requirements due to weak infrastructure, financial constraints, and lack of support from higher authorities.

Overall Evaluation

Based on survey results, in-depth interviews, and field observations, it can be concluded that digital transformation in Vietnamese secondary education institutions faces numerous challenges, especially in rural areas. The lack of infrastructure, resources, and training hinders these schools’ ability to adapt to digital technology, thus slowing down the progress of digital transformation across the country.

5. Proposed Solutions

Based on the findings of this study, several key solutions are proposed to support the adaptation of digital transformation models in Vietnam’s secondary education management. These solutions aim to improve infrastructure, enhance digital skills, and foster supportive policies, ensuring that school managers can lead the digital transformation effectively.

Developing Training Materials and Programs for School Management

To equip school managers with the necessary digital skills, a comprehensive system of training materials and programs should be developed. This solution includes content covering:

Digital Management: Focusing on software for student, teacher, administrative, and financial management, such as Learning Management Systems (LMS) and e-finance software.

Online Teaching Technologies: Training on using platforms like Google Classroom, Microsoft Teams, and Zoom for efficient online classroom management.

School Management Innovation: Introducing modern management skills, such as using Big Data for decision-making, optimizing administrative processes, and managing educational information electronically.

Data Security: Addressing critical information security topics, including network security, data protection policies, and managing data safety to safeguard school information.

The training materials should be digitized, interactive, and available on online platforms to increase accessibility, particularly in remote areas.

Increasing Competency-Building Programs for Management Staff

To strengthen digital transformation competencies, a series of targeted competency-building programs are essential. The key areas of focus include:

Knowledge on Digital Transformation: Ensuring managers have a strong foundation in key digital concepts and systems, such as LMS and e-administration tools.

Digital Management Skills: Equipping managers with the ability to use digital tools for data, finance, administration, and teaching oversight.

Modern Management Mindset: Training on transitioning from traditional to technology-based management methods to adapt to rapid changes in education.

Leadership and Communication in Digital Environments: Helping managers develop skills to support and guide teachers and students in adopting new technologies effectively.

Programs should include practical exercises, real-world scenarios, and ongoing assessment systems to track progress and adapt to learning needs.

Establishing a Digital Management and Teaching Environment in Schools

To ensure a robust and sustainable digital environment, schools should:

Build a Comprehensive Digital Management System: This system would cover all aspects of school management, from registration and grades to administrative and financial operations.

Create a Digital Learning Platform: Offering tools and platforms for online learning, such as digital lectures, electronic resources, and interactive applications.

Adopt Advanced Technologies: Utilizing artificial intelligence, machine learning, and Big Data for personalized student support and teaching optimization.

Ensure Data Security and Privacy: Implementing strict data protection measures to maintain the confidentiality and security of student and teacher information.

Developing infrastructure, continuous technical support, and partnerships with technology companies are critical to support these digital environments effectively.

Building Public-Private Partnerships for Technological and Educational Resources

To maximize resource allocation and technological accessibility, public-private partnerships are recommended. This approach includes:

Creating Clear Partnership Policies: Defining roles and responsibilities for schools and private sector partners to ensure consistent resource support.

Encouraging Investment in Infrastructure: Encouraging businesses to invest in technology infrastructure, especially in remote areas.

Collaborative Training Programs: Inviting private partners to support teacher and management training on technology use and maintenance.

Developing Digital Education Products and Services: Collaborating with tech companies to develop customized educational products, such as learning management platforms and personalized teaching tools.

Implementing a system of incentives, such as tax breaks and government support, would encourage private sector investment and help create sustainable educational partnerships.

These proposed solutions aim to create an adaptive, resilient educational system that empowers school managers to lead in a digitally transformed environment, improving the quality of education across Vietnam.

6. Conclusion

This paper has analyzed the current state and challenges of implementing digital transformation models in school management for administrators in Vietnam's general education sector. The research underscores that digital transformation in education is not only an inevitable trend in the context of the Fourth Industrial Revolution but also a critical factor in enhancing the quality of management and teaching.

The proposed solutions, which include developing digital competency training programs for administrators, establishing a digitalized management and learning environment, and fostering public-private partnerships in educational technology, aim to create a robust foundation for digital transformation in general education. Effective implementation requires coordinated commitment and support from leadership at all levels, infrastructure and financial investment, along with active involvement from businesses and the community.

The research findings and proposed solutions presented in this paper hold practical significance for improving educational management effectiveness and contribute to the sustainable development of Vietnam's education system. This will ensure that students have access to a modern, flexible, and creative learning environment in the digital era.

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