



Teachers Attitudes and Readiness towards Digital Transformation in Education: A Review

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Abstract

The shift towards digital education is an inescapable fact in the modern era of technological upheaval. In order to adjust to this change, teachers' place at the head of the classroom is becoming more and more crucial. This study uses a literature review approach to assess teachers' readiness for the digital education revolution. The study examines a variety of academic publications, papers, and earlier research findings that cover topics such as teacher digital competence, attitudes toward technology, institutional support, and the obstacles faced throughout the digital adoption process. The study shows that factors like experience, training in information and communication technology, access to digital infrastructure, and supportive educational policies have a significant impact on a teacher's preparedness. Despite some educators' enthusiasm and openness to change, there are significant obstacles, such as inadequate access to technology, poor digital literacy, and inadequate continuous support from educational institutions. In order to improve teachers' preparedness for navigating the digital education age, this study promotes the creation of a strategy for ongoing professional development, the availability of fair technological resources, and the development of a digital culture in schools.

Keywords: Digital literacy, Digital Education Revolution, Teacher preparation

Introduction

Modern society during the era of scientific and technological advancement is marked by the swift evolution of digitalization across all facets of life, particularly in education. The future of higher education is now closely tied to the digital transformation processes, which are garnering increasing attention from the academic community. This transformation is defined by the incorporation of digital technologies into every element of vocational and pedagogical education, enhanced access to diverse information resources, and the deployment of multimedia tools in the educational process, all of which foster the development of an electronic educational environment. The digital educational environment represents a new reality where all elements of the education system engage through innovative pedagogical digital tools and technologies,

enabling the creation of digital learning content and the establishment of personalized educational pathways (Anh et al., 2019). A crucial role in the digital transformation of higher education is attributed to scientific and pedagogical professionals, who serve as the primary agents in the training process for the digital economy. Consequently, there is a pressing need to examine the preparedness of educators to operate within the context of higher education's digitalization, as they constitute the most progressive segment of the teaching community. Nevertheless, despite the substantial body of scholarly work by both domestic and international researchers focusing on the nuances of educational digitalization, the issue of teachers' readiness for professional engagement in a digital environment remains unresolved and is primarily addressed by scholars at the level of problem identification. Furthermore, the experience of integrating digital technologies into the educational framework cannot be deemed fully explored. In this context, the research undertaken by the authors of this article appears pertinent and contributes additional insights to the theoretical comprehension of digitalization.

Literature Review

The Preparedness of Educators for Online Learning

The concept of preparedness for online learning was introduced by Warner, D., Christie, G., and Choy in 1998 during their research project focused on the Australian vocational education and training sectors. Numerous researchers have aimed to investigate the elements of readiness that influence performance in online learning (Hung 2016). The level of readiness for online learning is recognized as a crucial factor impacting academic success in online courses (Wei and Chou 2020). The idea of readiness is of great significance as it lays the groundwork for creating a theoretical framework related to the preparedness and equitable experiences linked to online teaching (Cutri and Mena 2020). Assessing online learning readiness involves evaluating specific organizational and individual factors that must be addressed to ensure the effective implementation of an e-learning strategy (Aldhafeeri and Khan 2016).

Digital Education and training

Digital teaching and learning encompass the capacity to fulfill educational objectives through digital literacy, creative thinking, effective communication, and enhanced productivity (Qoura, 2020). While conventional classroom instruction typically lacks immediate assessment and engagement, digital teaching and learning can leverage these benefits (Haleem et al., 2022). Recent literature on digital transformation has identified four key components of digital teaching and learning: digital curriculum, digital tools, digital delivery, and autonomous learning (Dash, 2022). In the digital teaching and learning landscape, curriculum materials are no longer solely linked to textbooks but also to information and communication technologies. The term digital curriculum refers to electronic books, digitized data, or content presented through various digital methods. Digital tools are now accessible via a range of digital devices, including computers, tablets, smart phones, or smart TVs, enabling effective interaction between students and teachers with the electronic curriculum (Blundel et al., 2016). These digital tools assist teachers in managing their classrooms, communicating with students and parents, enhancing learning through videos, simulations, and other multimedia resources, and evaluating student performance. Digital delivery pertains to the diverse learning

activities of students conducted over the Internet. Instruction can be provided via the Internet or a corporate Intranet to learners equipped with browsers. In contrast to traditional classrooms, digital teaching and learning facilitate participation from both teachers and learners in an organized manner.

Education's Digital Transformation

Many social events have moved to online platforms as a result of the need to maintain social distance (Chen, Lerman, & Ferrara, 2020). On the other hand, educational institutions are switching their learning sessions from live, in-person encounters to online formats that students can access from their own homes. The adoption of technology-driven and online learning programs allows pupils to continue their education uninterrupted, according to Mat Dawi, Theam, Palaniandy, and Dolah (2016). Online education makes use of information and communication technology (ICT), such laptops, mobile devices, the internet, and other resources, and it comes in two forms: synchronous and asynchronous (Dhawan, 2020). As a result, in order to assure the efficacy of learning sessions throughout the pandemic, the government has taken steps to transform the national education system into a technology-oriented framework, introducing applications like Google Meet, Zoom, Webex, Microsoft Teams, WhatsApp, Telegram, Canva, Blackboard, and other software for interactive quiz-based digital learning (Musa and Abdillah, 2021).

Teacher Readiness in Knowledge, Literacy, and Attitude

Research conducted by Faloon (2020) highlights the importance of this aspect considering their future responsibilities as educators, training young individuals to cultivate the ability to utilize digital resources and information in sustainable, safe, and effective manners. A comprehensive framework for teacher digital competency is introduced to assist in this endeavor, and teacher educators play a vital role in implementing it through deliberate planning, modeling, and instruction.

According to Bakke, Steinvik, Angell, and Wisborg (2017), readiness is a process that encompasses the integration of emotional components, cognitive processes, and physicality in executing tasks. Generally, a teacher's willingness is associated with their acceptance of a change or reform initiative. Preparedness during the teacher's instructional session aids educators in engaging students in the teaching and learning experience. The Covid-19 pandemic has caused a significant transition from in-person learning to online education at home, which has taken both teachers and students by surprise. As noted by Abdul Aziz, Soffian Lee, and Yusof (2021), the advent of new norms in the learning process requires teachers to adapt as swiftly as possible to ensure that the learning and facilitation processes remain unaffected.

Technological Readiness

The advancement of digital education presents numerous challenges for educators, particularly due to the swift evolution of technology. Educators must be equipped to utilize technology and incorporate it into their instructional materials. The digital transformation in education necessitates that teachers employ technology to address challenges and evaluate their teaching practices (Nguyen et al., 2022).

To adequately prepare educators for the effective integration of technology into their teaching methodologies, it is recommended that institutional leaders formulate a thorough strategy for digital transformation. This preparation strategy should empower teachers to build confidence in their capacity to execute the digital curriculum. Additionally, educators require continuous professional development to create a digital curriculum (Al-Awidi & Aldhafeeri, 2017)

Pedagogical Readiness

To effectively engage with digital transformation, educators must comprehend teaching theories and be adept at selecting suitable technology to enhance their instruction. It is essential for teachers to be equipped for digital pedagogy (Cabanero et al., 2022). In simple terms, digital pedagogy refers to the effective efforts of educators to leverage technology in order to transform their teaching and learning processes within a digital context. Common examples of digital pedagogy include utilizing various media types in the classroom, encouraging students to employ digital tools for idea development, and assessing learning progress (Aditya, 2021).

Incorporating Educational Technologies into Teaching Methods

How Often Is Technology Used?

Teachers may experience isolation when technological challenges arise, which might undermine their self-assurance in using technology (Kamble, Gauba, Desai, & Golhar, 2021). These challenges are especially clear in schools with poor technological infrastructure.

The Different Kinds of Instructional Technology Utilized: The availability of resources is the main factor in determining the range of technologies employed. While educators in well-resourced schools tend to use a wider range of technologies, those in underfunded schools frequently rely on outdated or restricted tools. Furthermore, many organizations are restricted by financial limitations from modernizing outmoded technologies, some of which might not work with the newest software or applications needed for creative classroom practices. Due to the lack of necessary infrastructure, even the best professional development programs on technology integration are ineffective for teachers in such settings.

Effects on Student Learning Outcomes and Engagement: Theories of learning have been debated for centuries, yet scientists, psychologists, and educators still have different viewpoints on current learning methods. Behaviorism, cognitive, constructivism, constructionist, and connectives are among the many learning theories that influence contemporary discussions on technology integration. The learner, the learner's relationships with others, and the learner's use of technology are all approached in very different ways by these theories. By fostering a sense of community and shared responsibility among teachers, collaboration allows them to learn from one another's experiences and ideas. Thoughtfully integrated learning significantly increases student engagement, motivation, and academic achievement.

The Connection between Teachers' Readiness and Integration Practices: The technological readiness of teachers is significantly linked to their actual implementation of technology in the classroom. In the

absence of easily accessible support, the potential advantages of educational technologies frequently remain unutilized, especially in schools where educators are already facing pressure to achieve curriculum objectives. Leadership and support within an institution can provide substantial assistance. When school administrators allocate resources towards infrastructure, professional development, and technical support in conjunction with technology integration, teachers recognize that technology is essential to contemporary education (Zander & Gustafson, 2023). Many educators are hesitant to adopt technology due to concerns that it may divert focus from critical learning objectives, particularly in more conventional subjects. However, the presence of teachers' motivation and eagerness to learn increases the likelihood of integrating technology into their instruction, despite the obstacles they might encounter.

The Link between TPACK and Demographic Profile Readiness: The growth of technological, pedagogical, and content knowledge is significantly influenced by a number of demographic variables, such as age, level of education, and years of experience. Trial and error, lesson redesign, and troubleshooting are frequently necessary when integrating new technological tools, all of which need a significant time commitment. One of the most significant problems is the teachers' lack of faith in using technology. Many teachers, especially those who have been in the field for a long time, might find the rapid pace of technological change to be daunting. The idea of integrating technology may seem intimidating to these teachers, especially if they are not comfortable using digital devices or believe they lack the technical expertise to troubleshoot problems. According to research, teachers who lack confidence in their technological skills are less likely to try new tools and more likely to stick to tried-and-true methods that they are more comfortable with. Teachers who have been in their positions for a long time may be reluctant to change their tried-and-true methods, especially if they believe that their current approaches are working well. Some instructors may not embrace technology because they believe it makes teaching more difficult rather than easier (Raygan & Moradkhani, 2022).

Development Programs for Technology Integration: Long-term, ongoing professional development initiatives are essential for the effective integration of technology. Research indicates that single-instance workshops are inadequate; rather, sustained, interactive, and contextually relevant training fosters enduring change. Professional development should prioritize technical skills while highlighting how technology can enhance teaching practices and align with content standards. Additionally, the formation of communities of practice, the provision of coaching support, and the availability of accessible learning resources significantly increase the likelihood that educators will successfully integrate technology into their classrooms. Despite the numerous challenges associated with technology integration in educational settings, these obstacles can be surmounted through supportive leadership, ongoing professional development, collaboration among teachers, and the cultivation of an innovative culture. Schools can create environments where technology is readily available and effectively integrated into instructional methods by addressing issues related to time, funding, confidence, and resistance to change. Strong institutional backing, motivated educators, and positive student outcomes serve as facilitators that can further enhance the success of technology integration and ultimately provide students with more engaging and productive learning experiences.

Advantages of Digital Transformation in Education

- Digital education improves the learning experience by making it more mobile, interactive, engaging, and motivating. The digital format allows educators to customize study materials to fit each student's pace and abilities, overcoming the limitations of student engagement found in traditional educational systems.
- Students are exposed to innovative learning tools and technologies, which assist them in developing strong self-directed learning skills that significantly boost their efficiency, learning capacity, and productivity.
- Digital technology has revolutionized the conventional classroom experience into an engaging digital environment. This transition can enhance student concentration, as they are well-versed in navigating the digital landscape.
- Previously, students relied on a limited number of information sources, but today, the internet provides a vast range of freely accessible knowledge. Consequently, the emergence of digital education has empowered students to explore and utilize this abundance of information.
- it enables the easy preservation and sharing of information with a simple click, rather than depending on handwritten notes, proofreading notes, shorthand notes, and so forth. This aids students in conserving both time and physical effort.
- the digital education system motivates students to venture beyond their comfort zones and become independent thinkers regarding their learning decisions, including what to study, when to study, and how to study, thereby decreasing their dependence on teachers and parents.
- Digital learning can be easily accessed by students via internet-enabled devices such as smart phones, tablets, desktops, and laptops.
- a robust educational framework has proven to be effective in situations such as epidemics and pandemics when traditional schooling is suspended.

Challenges Encountered by Educators in Digital Transformation

The trend of digital transformation in the education sector has become essential in this swiftly evolving era of globalization. The advancement of information and communication technology has not only changed how individuals interact and carry out their responsibilities but has also fundamentally altered the dynamics of teaching and learning within classrooms. In this context, educators play a crucial role in facilitating these transitions.

However, the process of adopting digital transformation is not straightforward for all educators. Numerous complex challenges arise as teachers navigate and implement digital transformation in their teaching practices. A significant challenge that educators encounter in this digital transition is their limited technological skills. Not every teacher has received adequate training or possesses a background in using digital tools and online learning platforms. For some educators, especially those from earlier generations, the transition from traditional teaching methods to technology-driven approaches often requires substantial adjustment. Insufficient knowledge of Learning Management Systems, difficulties in operating educational

software, and a lack of confidence in trying new techniques create considerable obstacles. This situation is further complicated by the inconsistent availability of formal and ongoing technology training for teachers. Often, educators find themselves needing to learn independently or rely on support from colleagues, which is not always adequate to effectively address the demands of digital learning.

Education's Potential for Digital Transformation

Education and communication are greatly improved by digital transformation. It is critical for schools and families to work together. The efficacy of the learning experience can be increased by including ICT into teaching methods. By engaging with the content, students can develop their ICT skills. Teaching students how to be critical users of the internet can improve their academic outcomes. The internet serves as a tool for improving education and facilitating communication.

Assessments conducted via mobile devices are recognized as a type of ICT adoption and a move in the direction of digital revolution in education. Medicine, biology, engineering, mathematics, and science technology are among the areas that might benefit from this digital shift. Mobile devices can also be used for learning, such as smart phones. The use of smart phones can enhance academic achievement if done correctly. Mobile learning tools come in a variety of forms, including smart phones and laptops. These gadgets have a lot of promise for improving the learning process. A meta-analysis and synthesis of 110 experimental journal articles concluded that mobile devices are essential for learning both inside and outside the classroom.

The inclusion of ICT into education can make learning simpler and enhance skills. After following the study agreement and deadlines, students are free to finish their online evaluations whenever it suits them. Online learning does not require physical attendance.

Conclusion:

Digital transformation represents a complex process that encompasses more than mere technology; it requires involvement at all levels from stakeholders and educational institutions to educators and learners signifying a crucial turning point for the organization. A comprehensive reform of the education sector, driven by innovative digital resources, will empower teachers to provide a holistic, engaging, and immersive learning experience for every student, equipping them for the future. Furthermore, it offers learners with disabilities, along with students from diverse linguistic and cultural backgrounds, the opportunity to access quality education. To successfully navigate a digital transformation, it is imperative to have skilled leaders, experienced partners, trained personnel, and continuous improvements as vital elements. The journey of digital transformation in education continues. The pandemic underscored various digital inequalities globally, yet it also expedited the transition towards increased digitalization in education, as online and distance learning became indispensable during that period. The digital transformation in

education is beneficial. Consequently, the prospects for digital transformation within the educational sector appear quite promising.

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