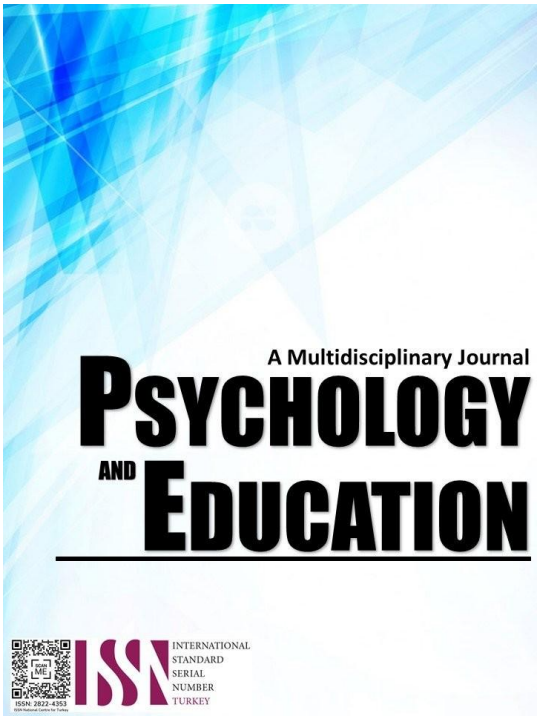
TRANSITIONING FROM PRINTED TO DIGITIZED SELF-LEARNING MODULES: CHALLENGES ENCOUNTERED BY TEACHERS



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Research Article

Transitioning from Printed to Digitized Self-Learning Modules: Challenges Encountered by Teachers

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Abstract

This study aimed to explore the challenges encountered by teachers in transitioning from printed to digitized self-learning modules. A multiple case study was employed to investigate the challenges, coping mechanisms, and lessons learned by teachers during this pivotal transition phase, shedding light on the complexities and nuances of adopting digital self-learning modules in educational settings. A purposive sampling technique was used to identify the four participants. The data were gathered through in-depth interviews. Findings revealed that teachers faced diverse challenges during the transition, including a lack of technical resources, a need for professional development, digital deficiency, as well as unequal access to technology, difficulties with student engagement, and inability to balance digital entertainment. To address these challenges, their coping mechanisms included flexibility and adaptability, positive thinking, openness to change, and peer mentoring. The lessons they learned focused on professional growth, instructional innovation, required commitment and dedication, promoting sustainability and efficiency, and embracing digitization to enhance learning. Furthermore, the emerging themes across cases highlight the value of a collaborative approach in digital education transitions, which could be incorporated into policy frameworks to support continuous professional learning and the development of digital infrastructure. This study emphasized that effective digital transformation in education is not merely about technology but also about building a culture of resilience, adaptability, and mutual support among teachers.

Keywords: *educational management, transitioning, printed, digitized self-learning modules, challenges, multiple case study, Philippines*

Introduction

The condition of education in the Philippines due to the COVID-19 pandemic that impacted our nation prompted the Department of Education to be more creative in ensuring that learners continue to receive accessible, high-quality, and fundamental education services. The department ensures that classroom instructional delivery methods are optimally suited to students' requirements. Based on the Learner Enrollment and Survey Form (LESF), most parents selected printed modular distance learning as their children's preferred educational approach. As traditional classroom environments were disrupted, the transition from printed to digitized self-learning modules became not just a preference but a necessity. Grasping the complexities of this transition is essential for improving the quality of education, as implementing practical, digitized self-learning modules requires a solid foundation in both technological competence and pedagogical theory (Cosby et al., 2023; Sillat et al., 2021).

Furthermore, teachers have reported difficulties in selecting appropriate digital resources and references for their self-learning modules, complicating the preparation of effective teaching materials. The challenge is not merely technical; it also encompasses pedagogical adjustments that require teachers to innovate and engage students in a digital landscape that differs significantly from traditional classroom settings. Therefore, educators must be creative in using digital learning media to sustain student engagement and motivation in online environments. However, many teachers feel overwhelmed by the expectations to master new technologies while simultaneously managing their students' learning experiences (Jamilah et al., 2022; Jevsikova et al., 2022; Rafiqa et al., 2022).

Moreover, the effectiveness of digital modules compared to their printed counterparts raises concerns regarding student engagement and learning outcomes. Studies have shown that while electronic modules can enhance learning motivation and outcomes, they also require a different approach to teaching that some educators may find challenging. The interactive nature of digital modules necessitates a shift from traditional teaching methods to more constructivist approaches, where students are encouraged to take an active role in their learning. This pedagogical shift can be daunting for teachers accustomed to more conventional methods, leading to resistance or difficulties in adapting their teaching styles (Mufidah et al., 2023; Syahrial et al., 2021; Funa & Talaue, 2021).

Moreover, teachers have been at the forefront of experimenting with new technologies and play a significant role in implementing digital self-learning resources. However, there is still disagreement over how best to train teachers to utilize digital tools in conjunction with content and a planned pedagogy. Considering the difficulties presented by the transition from print to digital learning materials, it is necessary to conduct this research and explore the challenges teachers face when transitioning from printed to digitized self-learning modules.

In the context of existing studies, this research contributes to the growing body of literature on educational technology and its rapid adoption during times of crisis. While numerous studies have examined the efficacy of digital learning tools and their impact on student outcomes, few have focused on the teacher's perspective, particularly regarding the emotional and practical challenges faced during transitions. This research aimed to fill that gap, providing valuable insights into the individual and professional growth of educators in the face of adversity.

From this perspective, examining the challenges posed by the transition from printed to digitized self-learning modules reveals a need to conduct this study and explore the challenges encountered by teachers during the transition from traditional printed materials to digitized self-learning modules.

Literature Review

Digitized Self-learning Modules

Digitized self-learning modules represent a significant shift from traditional educational resources by integrating technology into instructional materials. These modules are digital formats of educational content designed to facilitate autonomous learning and engage students through interactive components. As digital technology becomes increasingly prevalent in education, the potential for digitized self-learning modules to enhance teaching practices and student learning outcomes has prompted significant interest among educators (Balqis et al., 2023).

Besides, one of the primary characteristics of digitized self-learning modules is their flexibility and interactivity. Digital modules often incorporate multimedia elements such as videos, graphics, and audio, which can cater to various learning preferences and enhance student engagement. Digital modules empower teachers by enhancing their creativity and ability to innovate in module design, which directly supports an independent curriculum. This versatility in presentation allows for differentiated instruction, where educators can tailor content delivery to meet the diverse needs of their learners, resulting in a more inclusive educational environment (Balqis et al., 2023; Elisa et al., 2022).

Furthermore, the importance of transitioning from printed to digitized self-learning modules lies in the growing demand for autonomy in learning, particularly enabled by advancements in technology. Digital modules offer structured guidance and facilitate self-assessment, thereby promoting independent learning among students. This capability aligns with modern educational paradigms that prioritize learner autonomy and self-regulated learning, skills increasingly necessary in today's fast-paced, information-driven society. The accessibility of digital modules can significantly enhance learning opportunities. Digitized modules enable students to learn anytime and anywhere, providing the flexibility that modern learners need (Firiani & Fadhilawati, 2022; Mukhid et al., 2023).

Additionally, digital learning modules also support the development of foundational skills essential for the 21st century. However, integrating technology into the learning process fosters critical skills such as problem-solving, collaboration, and adaptation to new tools and platforms. Despite the numerous advantages of digitized self-learning modules, the transition from printed to digital is not without challenges, particularly for teachers who may lack the necessary digital proficiency. Teachers now face the dual task of replacing traditional methods with technology while ensuring their digital literacy to utilize these new tools effectively. Research has consistently demonstrated that these digital formats lead to improved academic performance across various disciplines. For instance, a study examining the impact of digital modules on eighth-grade mathematics achievement revealed substantial gains in posttest scores among students using enhanced e-content, pointing to the efficacy of digital educational tools in facilitating learning (Kapoor & Cheema, 2024; Rahmawati et al., 2024).

Challenges in Transitioning from Printed to Digitized Self-Learning Modules

People's reactions to change across time are referred to as transitions. People undergo transitions when changing how they act or behave to accommodate changing circumstances. Changes may also occur in a person's existence, but they cannot be considered transitions if the individual remains in the same place and attaches little or no value to them. There is a risk that the transition will become a concept that helps conceal the hidden problems of a school or educational system's official reality. The transition from printed to digitized self-learning modules presents a multifaceted challenge for educators, particularly in the context of rapidly evolving educational technologies and the global shift towards online learning due to the COVID-19 pandemic. This transition is not merely a format change but involves significant pedagogical, technological, and psychological adjustments that educators must navigate.

Additionally, the educational system underwent changes when a pandemic struck the country in the first quarter of 2020. This resulted in the shutdown of schools, and distance learning is being used in the educational setting. The continued search for alternative delivery has led to the digitization of learning materials. COVID-19 has sparked a growing appreciation for digital tools, online resources, social media technologies, and e-learning platforms. According to the literature, no paradigm shift in educational settings can be successfully projected unless teachers are first made aware of the objective. There is increasing demand for them to use technology's capabilities to close learning gaps (Mulenga & Marbán, 2020).

However, several technical issues hinder the teaching and learning process for e-learning users, including discomfort with e-learning, increased annoyance and disorientation, and inadequate technology compatibility. A lack of time and location flexibility, as well as disparate students and learners, are additional issues. Moreover, both instructors and students acknowledged the challenges of learning various applied courses and completing online work, as well as the need for their physical presence and direct engagement, provided the professor makes the course clear and understandable. Everyone anticipates challenges in evaluating electronic tests due to the lack of clarity in the evaluation methodology (Dhawan, 2020; Pathak et al., 2021).

Furthermore, insufficient access to technological resources can limit teachers' ability to create and implement effective digital learning

materials. The shift to digitized formats requires not only the availability of technology but also the skills to use it effectively. This sentiment is echoed by Pérez et al., who argue that integrating new technologies in education is crucial for expanding educational opportunities; however, many teachers lack the necessary training and resources to leverage these technologies fully. The disparity in access to technology can create a significant barrier, particularly in under-resourced educational settings, where teachers may struggle to provide students with the interactive and engaging learning experiences that digital modules can offer (Funa & Talaue, 2021; Pérez et al., 2023).

In addition, the need for professional development is paramount in equipping teachers with the skills necessary to navigate the transition to digitized self-learning modules. Technological advancements require educators to develop new skill sets to avoid being left behind in the digital age. Professional development programs that focus on enhancing teachers' digital competencies are essential for fostering confidence and competence in using technology effectively. Additionally, educators faced various challenges during online teaching, including technical difficulties and the need for ongoing training to improve their digital skills. This highlights the necessity for continuous professional development initiatives that address the specific needs of teachers in the context of digital education (Arumugam et al., 2021; Juškevičienė et al., 2020).

Likewise, the issue of devotion to study was another issue. This issue arose because enrolling in online programs presented greater temptations to procrastinate than in traditional classroom settings. Students' motivation played a crucial role in digital learning. Distractions that the students encountered while doing their homework at home affected the learning process. Low-motivated students should exert more effort to maintain their motivation by reminding themselves of their objectives. Students who lack motivation may also benefit from the professors' meaningful but enjoyable learning materials (Nartiningrum & Nugroho, 2020).

Coping Mechanism on the Transition from Printed to Digitized Self-learning Modules

For professional performance and well-being, it is crucial to have the ability to adapt quickly to changing circumstances and various demands. Every educator must develop crucial characteristics such as flexibility and adaptability. Effective teachers can adapt, alter, and modify their instructional strategies according to the students' needs, available resources, and location. Teachers in the educational system play a crucial role in helping students develop 21st-century skills. To teach students in innovative ways, teachers must be able to adapt to 21st-century curricula. The question then arises whether our teachers are prepared to address this reality (Afandi et al., 2019; Collie, Granziera, & Martin, 2018; Gonzales, 2020).

Moreover, several assessment techniques denote the underlying connection between adaptability and flexibility. They created a scale for cognitive flexibility, one of whose fundamental characteristics is the willingness to adapt to a particular situation. Other characteristics of this scale include awareness of alternative options in any given situation and self-efficacy in being flexible. Additionally, due to technological advancements, education is becoming increasingly flexible and accessible. Physical barriers have been removed, online degrees and mobile learning are gaining popularity, and technologies can help their staff further their education. These are fantastic strategies for educators to use from the outset to help kids stay organized and streamline their tasks. In addition to providing children with access to information, modern technology can entertain and empower them (Haleem et al., 2022).

Moreover, one of the primary ways positive thinking affects teachers during this transition is by enhancing their self-efficacy. Research indicates that teachers with high self-efficacy are more likely to embrace new technologies and pedagogical approaches. This belief can lead to a more enthusiastic and innovative approach to using digitized self-learning modules, ultimately benefiting student engagement and learning outcomes. Moreover, positive thinking fosters a growth mindset among educators, encouraging them to view challenges as opportunities for learning and development. This mindset is crucial in the context of transitioning to digital learning environments, where teachers may encounter various obstacles, such as technical difficulties or student resistance. Teachers who maintain a positive outlook are more likely to persist in overcoming these challenges, seeking solutions and support rather than succumbing to frustration (Wang & Chu, 2023).

Additionally, a positive mindset enables teachers to experiment with new digital tools and methodologies, resulting in more engaging and effective learning experiences for students. In addition to enhancing self-efficacy and fostering a growth mindset, positive thinking can improve teachers' emotional resilience. The transition to digitized learning can be stressful, particularly for those who are less familiar with technology. Teachers who approach this transition with a positive attitude are better equipped to manage stress and maintain their well-being (Fazilla et al., 2022; Mannila et al., 2018). The impact of positive thinking extends to student engagement as well. Teachers who approach their work with optimism and enthusiasm are more likely to inspire similar attitudes in their students. Research indicates that positive teacher-student interactions can significantly enhance students' motivation and engagement, ultimately leading to improved academic outcomes.

Furthermore, peer mentoring encourages the sharing of best practices and resources among educators. This collaborative environment allows teachers to learn from one another's experiences, which can be particularly beneficial when transitioning to digital learning formats. Interaction with peers and mentors can lead to personalized feedback and the application of educational content from theory to practice, thereby enhancing teachers' self-direction and active learning. This exchange of ideas and strategies can help teachers overcome common obstacles associated with digital learning, such as technical difficulties and student resistance. Peer-based mentoring is effective in fostering new digital capabilities in inexperienced teachers, thereby supporting their adaptation to new educational

technologies (Guillaume et al., 2022; Santos-Rico, 2024).

Lessons Learned on the Transition from Printed to Digitized Self-Learning Modules

Educators' roles are changing worldwide as more people realize the importance of making learning objectives for students include twenty-first-century abilities. Teachers in this period need a new perspective on education and to be open to adaptation and change for this transition to be realized to its fullest potential. Educators have recognized their deficiency in computer proficiency for online teaching and digital instructional material development. They desire guidance or education on online tools and platforms for creating e-content and online instruction (Hassan et al., 2020).

Likewise, teachers constantly face changes throughout their careers. Some of these changes, such as adjustments to education programs, are implemented over a relatively long period, while others occur suddenly, as seen in the COVID-19 crisis. The duration of changes indeed has a decisive effect on teachers' adaptability. Teachers usually have enough time to acquire the knowledge and skills required by relatively slow changes. That said, sudden changes, such as those experienced during the COVID-19 pandemic, often do not provide adequate time for adaptation in education systems and among teachers. Such changes come to the agenda, accompanied by their adverse effects on teachers and the new opportunities they might create (Burgess & Sievertsen, 2020).

Besides, one significant insight gained through the enhancement of teachers' technological skills is the ability to integrate digital literacy into their instructional practices. Research indicates that teachers proficient in digital literacy are better equipped to incorporate technology into their teaching, fostering enhanced student engagement and focus. Teachers' technological skills enhance their confidence, resulting in improved self-efficacy. For example, as teachers learn to navigate various digital platforms, they can offer more interactive content, which has been shown to positively influence student behaviour and motivation within learning environments (Andreou et al., 2022; Farisia & Syafi'i, 2024).

Additionally, the rapid transition prompted by the COVID-19 pandemic has further underscored the need for resourcefulness among educators. Funa and Talaue's study illustrates how teachers had to adapt existing print materials into digital formats, showcasing the urgency and necessity of creative resourcefulness in addressing immediate educational challenges. In this light, teachers who cultivate a robust understanding of digital technologies are better positioned to create impactful learning modules that engage students and meet educational standards effectively (Brega & Kruglyakova, 2022; Funa & Talaue, 2021).

Additionally, transitioning to digital formats often results in lower resource allocation for maintenance and logistics. For instance, educators no longer need to worry about physical wear and tear on books or the costs related to their replacement. Digital materials can be accessed across multiple devices, which decreases long-term expenditure on physical copies and increases accessibility for students. This accessibility can materially benefit both educators and learners, facilitating diverse learning styles and promoting engagement (Ghadah et al., 2023). Digital modules can optimize resource utilization. Kalwar et al. highlight that digital technologies can enhance the overall cost structure by reducing waste and increasing the efficient use of materials. This is particularly crucial in an educational context where schools and educators often face budget constraints and seek to maximize their investment in educational materials. By leveraging cost-effective digital solutions, teachers can allocate funds towards other valuable educational resources, such as professional development and technological infrastructure (Ghadah et al., 2023; Kalwar et al., 2024).

Methodology

The present investigation focused on teachers' experiences during the transition from traditional printed self-learning modules to digital formats. The study's cohort comprises teachers who teach students in Grades 4, 5, and 6 at Polo Integrated School. This study employed a qualitative multiple-case study design due to the diverse backgrounds of the participants involved. The research methodology used is qualitative, as it has enabled participants to express their personal experiences, encompassing both their achievements and obstacles, from their own vantage point.

Moreover, the multiple case study design is a qualitative research methodology widely used across various disciplines to explore complex phenomena within their real-life context. This approach distinguishes itself by examining multiple cases, thereby enabling a nuanced exploration of themes, variations, and patterns across various contexts. The significance of this design lies in its ability to provide a thorough understanding of the research topic, facilitating deeper insights than might be achievable through a single-case analysis. By leveraging multiple cases, researchers can compare findings, revealing subtle differences and similarities that contribute to a more elaborate narrative about the phenomenon under investigation (Akoh, 2020; Awasthi & Walumbwa, 2022).

Additionally, to implement a multiple case study design effectively, researchers must begin with the careful selection of cases. The cases should be purposefully chosen based on their relevance to the specific research questions. This purpose-driven selection is critical; it enables the exploration of variations across cases and enhances the depth of analysis by incorporating diverse perspectives. For instance, a study focusing on educational practices might select schools from varying socio-economic backgrounds to elucidate how context influences pedagogical strategies (Sanczyk et al., 2021; Hogan et al., 2022). Herein lies the advantage of the multiple case study design, as it enriches data collection with a variety of contexts, contributing to a stronger theoretical foundation.

Similarly, data collection methods in a multiple case study design encompass various qualitative techniques. Interviews are one of the

most common methods, allowing researchers to obtain rich narratives and personal insights from participants. These interviews can be structured, semi-structured, or unstructured, each offering different levels of flexibility in capturing the participants' voices (Conklin et al., 2024). Observations can also be employed to gather data on real-time interactions or behaviors within the cases, providing contextual information that enhances understanding. Moreover, document analysis—utilizing artifacts such as reports, communications, or curricula—serves as an additional layer of data, allowing for a more holistic view of the case (Hogan et al., 2022).

Furthermore, the analytical process within multiple case studies often involves thematic analysis, which allows for the identification of recurring themes and patterns across cases while preserving the individuality of each case's context. Initial analysis may focus on within-case exploration, yielding detailed descriptions of each situation. Following this, researchers conduct cross-case analysis to identify overarching themes or discrepancies among the cases, facilitating a broader understanding of the phenomenon (Fortune et al., 2024). This dual approach not only deepens the analysis but also builds a more rigorous foundation for concluding, enhancing the credibility and validity of the findings (Johnston, 2024). Importantly, reflexivity plays a crucial role throughout the multiple case study process. Researchers must be aware of their biases and how these may influence data interpretation and interactions with participants. Engaging in reflexivity helps ensure the integrity of the research process by documenting thoughts, experiences, and any potential biases. Researchers can maintain a critical perspective on their influence in the study (Mueller, 2022).

Results and Discussion

This section presents the cross-case analysis on the participants' experiences in transitioning from printed to digitized self-learning modules, focusing specifically on the challenges they encountered, the coping mechanisms they employed, and the lessons they learned throughout the process.

Table 1. *Similarities and Differences on the Challenges, Coping Mechanisms, and Lessons of CT1 in Transitioning from Printed to Digitized Self-learning Modules*

	Emergent Themes	*Similarities*	*Differences*
Challenges	Lack of Technical Resources	Lack of budget for the procurement of gadgets No budget to buy own laptop Lack of technical support	
	Need for Professional Development	Scared to use computer Find it difficult to use different platforms	
	Digital Deficiency		Rapidly adapt to unfamiliar digital platforms Unprepared for digitization Lack of basic ICT skills
	Unequal Access to Technology	Device is not available Unequal distribution of resources	
	Student Engagement Gap		Lack of social interaction Distractions and technology issues
	Inability to Balance Digital Entertainment		Learning is diverted with games Different to read in print than on the screen
Coping Mechanisms	Openness to Change	Overcome resistance Embracing the new way of learning	
	Positive Thinking	Difficult but eventually get used to it Focus on positivity of everything	
	Peer Mentoring	Sharing of expertise and resources Working together Providing support and guidance	
	Flexibility and Adaptability		Adjust to challenges Overcoming limitations of resources
	Professional Growth		Levelling of competence Exploring new educational technology Develop lifelong learning
Lessons	Instructional Innovation	Explore new platforms Become creative and smart Seek out solutions to overcome the challenges	
	Commitment and Dedication	Willingness to learn and attend	

	webinars Have motivation to push more	
Sustainability and Efficiency	Reducing printing cost Reduce environmental impact Save time, money and effort	
Embrace Digitization to Enhance Learning		Teachers become techy Enhance leveling of competence

Challenges of Teachers in Transitioning from Printed to Digitized Self-Learning Modules

Lack of Technical Resources

The transition from printed to digitized self-learning modules presented several challenges for teachers, primarily due to the limited availability of technical resources. According to participants CT1, IT2, RT3, and HT4, the common difficulties included a lack of budget for procuring essential gadgets, which significantly affected the effective implementation of the program. In some cases, teachers were forced to personally fund necessary devices to ensure that students received a quality education. The limited budget was exacerbated by competing school priorities, as technology procurement was often not given precedence over other essential supplies and associated costs.

In line with Gündüz's study, insufficient funding often leads to inadequate resources for implementing effective digital learning strategies. For instance, he highlights that the insufficiency of school budgets directly impacts the effectiveness of educational initiatives, including the transition to digital formats. This lack of financial support can hinder the development and distribution of quality digital materials, which are essential for practical self-learning modules (Gündüz, 2020). Similarly, teachers express frustration over technical failures and insufficient guidance in using digital tools, leading to a demotivating educational environment, as noted by Pamogas (Pamogas, 2022).

Furthermore, as we consider pedagogical practices, engagement in self-directed and self-regulated learning can also be severely impacted by the lack of technical resources. Mario and Tran discuss barriers to implementing self-regulated learning strategies, indicating that resources significantly influence teacher capabilities to foster such learning environments (Mario & Tran, 2024). Similarly, Li emphasizes the need for robust online teaching platforms and resource libraries as fundamental to a successful digital transformation in educational settings, asserting that insufficient resources can severely hamper effective teaching and learning. This is echoed by Yao and Shi, who provide evidence that the lack of resources, infrastructure, and training directly complicates the implementation of digital educational practices in vocational contexts (Li, 2024; Yao & Shi, 2024).

Need for Professional Development

The study found that several participants, especially CT1, RT3, and HT4, needed professional development in digital skills, as they admitted to having only basic knowledge of ICT tools. They often sought assistance from more tech-savvy colleagues. A major issue was the lack of training on how to effectively integrate digital tools into their teaching methods. These teachers lacked confidence in using digital platforms, such as video lessons and audio recordings. This gap in skills led to heightened stress and anxiety, as they faced challenges with the absence of hands-on, face-to-face training. Most of the available professional development sessions were conducted online, which only added to the difficulty of grasping these new digital tools and techniques effectively.

Professional development was an issue among teachers' challenges. They struggle to adjust to digital learning without training. This limited their digital platform confidence. Due to inadequate digital skills training, teachers reported increased workloads and unpleasant emotional reactions. This highlights the necessity for continuous professional development to enhance teachers' digital competence, thereby fostering a more equitable and resilient educational environment as they adapt to new teaching modalities (Portillo et al., 2020). Teachers' acceptance of distance learning technologies was reevaluated after the change to remote education, demonstrating that performance expectation and technological anxiety strongly impact their adoption. Their study emphasizes the need for professional development programs that address technical skills and cultivate reflective and experiential learning to boost instructors' confidence and competency in using digital resources. (Jevsikova et al., 2021).

Additionally, continuous engagement in the learning process is essential for cultivating teachers' competencies in integrating technology. Studies by Ji et al. emphasize that the interplay of social inclusion and digital learning highlights the necessity for sustained professional development efforts. Such efforts must account for the socio-economic disparities that may further hinder teachers' access to practical training programs (Ji et al., 2022). The concept of digital accessibility is another aspect requiring substantial professional development focus. Research by Sanderson et al. identifies the lack of training regarding universal design and digital accessibility as a key challenge affecting educators' ability to ensure inclusive digital education (Sanderson et al., 2022).

Digital Deficiency

One of the participants in the transition from printed to digitized self-learning modules struggled due to a lack of digital skills. This issue became evident in the response of CT1, who was asked to quickly adopt an unfamiliar program without prior training. The lack of digital competence further compounded her difficulties. With limited exposure to digital tools and technologies, she had few

opportunities to build the skills and confidence needed. Many teachers, particularly those with traditional pedagogical backgrounds, rely heavily on printed materials and face-to-face interactions. This limited exposure to digital tools has hindered their ability to develop necessary skills and confidence. As a result, some teachers may feel apprehensive about adopting and implementing new technologies and teaching methods.

One of the challenges encountered by the participants is preparation. Teachers needed to figure out what to do first. They had attended seminars online on how to implement distance learning. They needed to explore more techniques and strategies to implement this modality. The limited time given to them, because they were at the pilot grade to implement it, gave them a hard time dealing with it.

In addition, the schools are not ready to implement distance learning, as shown by the inadequate learning materials to be used in the said modality, the unavailability of online modality facilities, insufficient funds to support alternative delivery modes, and low capacity to print and distribute learning materials. Other pertinent challenges revolved around preparation, competencies, funding, and devices essential to delivering distance learning. Thus, teachers new to distance learning may feel unprepared to facilitate teaching and need support with technical, pedagogical, and time management. Instruction heavily relies on technology, leaving the teachers unprepared and incompetent (Asio, 2021; De Villa & Manalo, 2020).

Therefore, by recognizing the critical role that digital competency plays in effective teaching, educational institutions can implement targeted professional development programs and create supportive environments that foster ongoing learning. Such initiatives will ultimately empower teachers to embrace digital transformation, resulting in enriched learning experiences for students.

Unequal Access to Technology

A common theme identified across all participants, CT1, IT2, RT3, and HT4, was unequal access to technology, which highlights the digital divide among students. Some students do not have personal devices and must share a single mobile phone with their siblings, creating a significant barrier to learning. This issue becomes more challenging as teachers are required to print copies of self-learning modules for students who lack access to devices. The inequity manifests in various forms, impacting teachers' ability to deliver quality instruction, assess progress, and foster supportive learning environments. This digital divide exists between students with access to devices and reliable internet connectivity and those without, disproportionately affecting students from low-income backgrounds, rural areas, and communities of color. Teachers face the challenge of providing similar learning experiences for all students, despite significant technological disparities.

Another common emergent theme among all participants is the Lack of Access to Technology. One of the most significant challenges in transitioning to digitized self-learning modules is ensuring equitable access for all students, regardless of their socio-economic background or geographical location. A lack of access to technology can significantly impede teachers' ability to develop and implement adequate digital learning resources. The availability of the device both for teachers and students is important in teaching and learning (Hasanah et al., 2022). Inequality in technological access creates a divergent learning environment wherein not all teachers can utilize digital education tools effectively. Technological implementation can level the educational playing field, noting that equitable access to resources can mitigate educational disparities (Akgün et al., 2023).

One of the most pressing issues is the disparity in access to technological tools. Reports indicate that educators in under-resourced environments often struggle to obtain the necessary devices and internet connectivity to deliver digital content effectively. For instance, Bordeos found that students generally express a preference for traditional face-to-face (FTF) classroom instruction over Modular Distance Learning (MDL) due to issues related to access and readiness for digital learning formats.

This aligns with findings from Mukhid et al., who underscore the importance of technological availability in fostering self-regulated learning and enabling effective digital education. When teachers lack access to technology, their ability to utilize digital self-learning modules suffers, creating a significant gap in educational equity (Bordeos, 2021; Mukhid et al., 2023).

Moreover, the lack of access to technology influences the overall learning environment, as teachers and students must adapt to using digital resources without the proper tools. This can result in a lack of engagement and motivation among learners, who may feel disconnected from the educational material. Studies show that digital learning environments can yield higher levels of student engagement when the proper technology is in place. Therefore, ensuring that teachers have the requisite technology is vital for cultivating an interactive and practical learning atmosphere (Iio et al., 2020; Lasala, 2023).

Student Engagement Gap

Only IT2 reported challenges related to student engagement during the transition. One key issue she encountered was the lack of social interactions, as students were primarily engaged in independent learning without opportunities for peer interaction. Digital learning platforms often fall short in providing the level of personalization found in traditional classrooms, leading students to feel that the materials do not cater to their individual needs and learning styles. A major disadvantage of e-learning is the absence of direct communication with teachers and classmates, which makes it more difficult for students to develop social connections. This lack of interaction can hinder students' ability to form meaningful relationships with their peers and teachers, affecting their overall learning experience.

Teachers were having difficulty with student engagement. Some of them do not comply with requirements because they lack motivation due to the absence of face-to-face interactions with the teacher and their peers. This lack of social presence can lead to decreased motivation and engagement, as students often thrive in collaborative environments where they can share ideas and receive immediate feedback (Chen, 2023). A primary aspect of the student engagement gap is the varying levels of motivation among students when interacting with digital learning platforms. Mashudi and Hilman indicate that digital resources can enhance student engagement, although the extent of this enhancement depends on effective integration into the educational context (Mashudi & Hilman, 2024).

Similarly, distractions from social media and gaming have been shown to detract from students' focus and commitment to their studies. Research indicates that while social media can enhance communication and engagement when used appropriately, it can also serve as a significant source of distraction. In addition to these distractions, individual learning styles also play a critical role in student engagement during the transition to digitized learning. Each student has unique preferences and approaches to learning, which can affect their ability to engage with digital content. The one-size-fits-all nature of many digital learning modules can alienate students whose learning styles do not align with the provided content, leading to frustration and disengagement. Educators need to consider these individual differences when designing self-learning modules, ensuring that they incorporate a variety of instructional strategies to cater to diverse learning preferences (Abidin, 2023; Dontre, 2020; Khalil et al., 2020; Korkmaz & Toraman, 2020).

Inability to Balance Digital Entertainment

This theme is mentioned only by IT2, indicating a concern specific to on the inability to balance digital entertainment with academic responsibilities can negatively impact students' educational outcomes by causing distractions and reducing their focus on studying, completing assignments, and participating in class. This is becoming an increasingly significant challenge in the digital era, where entertainment is just a click away.

One of the critical issues stemming from digital entertainment is decreased student motivation and focus. Martinez et al. emphasize that while digital games can enhance learning motivation, they can also serve as a distraction if not integrated effectively into the curriculum (Martinez et al., 2022). The prevalence of digital distractions complicates teachers' efforts to maintain student engagement. Wang et al. suggest that self-regulated learning strategies can empower students to mitigate distractions and focus on their studies (Wang et al., 2022).

Moreover, the impact of digital distractions on academic performance cannot be overstated. While Rzabayeva et al. do explore various aspects of gamification and engagement, their citations may not fully address the specific relationship between digital distractions and student focus as claimed (Rzabayeva et al., 2024). Teachers often harbor concerns that frequent exposure to entertainment-based platforms may impede students' ability to concentrate and develop critical academic skills. According to Kokandy, a significant portion of educators feel that digital gaming hampers attention spans and communication skills, presenting legitimate concerns about the impact of digital entertainment on educational priorities (Kokandy, 2021).

To navigate these challenges, teachers must employ strategies that engage students in meaningful ways. For instance, incorporating interactive modules with formative assessments can foster a sense of autonomy and responsibility among students, allowing them to take control of their learning while minimizing distractions from excessive entertainment (Adha et al., 2023). By leveraging technology effectively, teachers can enhance students' critical thinking and creative skills, which may be compromised if students are allowed to disengage too much with non-educational content (Adha et al., 2023; Tarigan et al., 2021).

Coping Mechanisms of Teachers in Transitioning from Printed to Digitized Self-Learning Modules

Openness to Change

Teachers view the transition as an opportunity to enhance their teaching methods rather than as a disruption. CT1, IT2, RT3, and HT4 have embraced change; they build confidence in their ability to navigate the digital landscape. This willingness to learn new systems, software, and platforms is essential for openness to a digital teaching environment. Consequently, openness towards change allows the teachers to break from this norm by appreciating the benefits of digital learning and targeting the establishment of the positive impacts of change on student learning.

Openness to change is essential to being effective and efficient teachers of the new normal. Teachers open to change are more likely to embrace these challenges, leading to improved organizational performance and enhanced educational outcomes. In addition, when teachers feel supported and informed about the changes, they are more likely to engage positively with new technologies and methodologies. This sense of security can significantly reduce resistance to change, allowing for a smoother transition to digitized learning modules (Albi, 2024).

A key factor in the successful adoption of digital resources is teachers' attitudes towards technology. Research indicates that a positive perception of educational technologies significantly enhances both acceptance and usability among educators. Specifically, studies demonstrate that a constructive attitude towards technology directly influences teachers' willingness to adopt new digital tools, thus validating the assertion that the acceptance and integration of technology into the classroom is a dynamic process shaped by educators' perceptions of utility and ease of use (Özyurt & Ayaz, 2022; Al-Hattami, 2023).

Furthermore, teachers' psychological readiness and their ability to manage technostress are crucial; improved technology leadership among school administrators can foster a supportive environment that alleviates stress related to these transitions (Yahşi & Hopcan, 2021). The context of digital learning during the global pandemic has highlighted unique challenges and opportunities in educational settings. Prasetyo et al. emphasize the importance of assessing e-learning platform acceptance, noting that teachers' willingness to adapt is integral to achieving sustainable educational practices during crises. This is supported by findings from Hong et al., indicating that teacher acceptance during emergencies relies not only on personal competencies but also on institutional and systemic support, such as training and resources, which can facilitate smoother transitions (Hong et al., 2021; Prasetyo et al., 2021).

Positive Thinking

Positive thinking fosters a growth mindset; in this setting, teachers view the transition as an opportunity to develop new skills and expand their professional capabilities. CT1, IT2, RT3, and HT4 embraced the challenge and viewed the transition as an opportunity for professional growth. They were optimistic about the successful integration of digitization within the school. Despite facing challenges during the implementation process, they maintained a positive attitude. Rather than dwelling on potential disadvantages, they focused on the benefits of adopting new technologies, which helped reduce some of the stress and anxiety that typically accompany change.

Maintaining a positive outlook in this new normal is essential. Upholding a positive mindset to assimilate changes is advantageous. During this pandemic, it is essential to prioritize mental health alongside physical health to navigate the new normal effectively. Positivity constitutes an essential element of an effective learning environment. Teachers maintain a positive outlook to persist in overcoming these challenges, seeking solutions and support rather than succumbing to frustration. Teachers' attitudes toward technology significantly impact their ability to develop effective lesson plans, particularly in science education. A positive mindset allows teachers to experiment with new digital tools and methodologies, leading to more engaging and effective learning experiences for students (Fazilla et al., 2022).

Moreover, embracing a positive mindset is linked to the development of resilience and enhanced reflective thinking skills among teachers. Research has shown that educators with a strong positive outlook are more inclined to reflect upon their practices critically, paving the way for improved teaching methodologies. In times of significant change, this reflective practice allows teachers to analyze what works and adapt accordingly, facilitating a better alignment of their pedagogical strategies with new digital resources. Kapasheva et al. emphasize that educators require additional support during digital transitions, indicating that such support could be augmented by fostering a culture of positivity within educational institutions (Erdoğan, 2020; Kapasheva et al., 2024).

The integration of positive thinking not only aids teachers in coping with the challenges of transitioning to digital platforms but also enhances their overall pedagogical competence. This results in better engagement with students through dynamic and creative instructional practices. Studies indicate that a positive approach among educators can lead to increased student interaction and performance, as lessons become more engaging and tailored to individual needs due to a teacher's adaptive strategies. Consequently, the implementation of techniques that promote a positive attitude among teachers could generate significant educational benefits, fostering an environment that encourages learner engagement and creativity (Lapada et al., 2020; Nugroho et al., 2021).

Peer Mentoring

Peer mentoring helped them develop a culture of continuous learning and professional development. CT1, RT3, and HT4 strongly believed in the power of collaboration. By sharing expertise and resources, they were able to make their work more manageable and reduce stress. They worked together, pooling their resources, and offered support to colleagues who were less technologically skilled by providing guidance and assistance. Recognizing the stress that comes with transitioning to digital learning, they saw peer mentoring as a valuable source of emotional support, helping individuals feel less isolated and more confident in adapting to the new learning environment.

Peer mentoring encourages the sharing of best practices and resources among teachers. This collaborative environment allows teachers to learn from one another's experiences, which can be particularly beneficial when transitioning to digital learning formats. Interaction with peers and mentors can lead to personalized feedback and the application of educational content from theory to practice, thereby enhancing teachers' self-direction and active learning (Guillaume et al., 2022).

Moreover, the implementation of virtual peer mentoring specifically addresses the challenges of increased digital demands, as seen during the COVID-19 pandemic. Tutyandari et al. suggest that virtual peer mentoring maintains the positive attributes of traditional mentoring, such as fostering a supportive environment where teachers can address common concerns about transitioning to digital platforms. This adaptability is crucial, as it provides a flexible mechanism for educators to share insights and strategies on navigating the complexities of online instruction. In the face of technological barriers and varying levels of digital literacy, such collaborative frameworks empower teachers to overcome challenges through shared experiences and resourcefulness (Tutyandari et al., 2022).

Additionally, peer mentoring can facilitate the development of digital competencies among teachers. Peer-based mentoring is effective in fostering new digital capabilities in experienced teachers, thereby supporting their adaptation to new educational technologies. This is particularly important in a rapidly evolving digital landscape, where educators must continuously update their skills and knowledge

to remain effective. By engaging in peer mentoring relationships, teachers can receive targeted training and support that is tailored to their specific needs and challenges (Santos-Rico, 2024).

Flexibility and Adaptability

This theme is clearly demonstrated by IT2, who navigated the unforeseen challenges of transitioning from printed to digitized self-learning modules with flexibility and adaptability. She successfully adapted to technological changes, remaining open to experimenting with new digital tools and software rather than clinging to traditional methods. While she acknowledged the difficulties encountered during the digitization process, she viewed these challenges as opportunities for growth and development. Although the transition from printed to digital learning materials may initially be challenging due to factors such as preparation time or a lack of resources, she believes that overcoming these obstacles contributes to personal and professional growth.

The participants' flexibility and adaptability contribute to addressing the challenges of the new regular education. Flexibility and adaptability are the two most essential qualities every teacher must possess. The participants exhibited these two characteristics, especially in the transition from printed to digitized self-learning modules. Many things must be considered at the start. They were hesitant because they were not used to it. However, they learned to accept and adjust to the situation.

In addition, teachers constantly face career changes. Some of these changes are in education programs, which are spread over a long period, and others occur suddenly, as in the COVID-19 crisis. The duration of changes has a decisive effect on teachers' adaptability. Teachers usually have enough time to acquire the knowledge and skills required by slow changes. That said, sudden changes, such as those experienced during the COVID-19 pandemic, often need to give adequate time to education systems and teachers for adaptation. Such changes come to the agenda with their harmful effects on teachers and the new opportunities they might create (Burgess & Sievertsen, 2020).

Moreover, Sánchez-Díaz et al. assert that a flexible teaching methodology—including adaptability in assessment methods and instructional materials—can significantly enhance inclusivity and accessibility in digital learning environments. This adaptability is essential as teachers encounter diverse student backgrounds and learning styles, especially in the digital context where traditional classroom dynamics are disrupted. Consequently, the ability to pivot and modify content delivery to suit different learning modalities reinforces the importance of teachers' readiness to embrace digital tools (Sánchez-Díaz et al., 2024).

Research during the COVID-19 pandemic has highlighted the role of pedagogical resilience, where flexibility emerged as a core trait in successful teaching. Zara et al. elucidate that resilience in teaching—characterized by the ability to maintain high educational standards despite challenges—often correlates with a teacher's flexibility and willingness to innovate in response to students' needs. As many educators found themselves unprepared for the abrupt shift to remote learning, those who exhibited adaptive resilience were better positioned to manage technology-related anxieties and facilitate meaningful learning experiences (Zara et al., 2022).

Lessons Learned by Teachers in Transitioning from Printed to Digitized Self-Learning Modules

Focuses on Professional Growth

The transition to digitized learning helped CT1 become more tech-savvy through her daily interactions with technology. Emphasizing professional growth fostered a mindset of lifelong learning, encouraging her to continuously seek opportunities to improve her skills. CT1 noted that the digitization program allowed her to enhance her technological abilities. She developed her skills through research, self-learning by watching YouTube videos, and collaborating with colleagues, which further boosted her competence. Additionally, she expressed gratitude for the opportunity to explore new educational technologies. These experiences not only expanded her knowledge but also helped them discover her talents and abilities in using ICT tools effectively.

Teachers were able to improve their digital skills during the implementation of the digitization program. Research indicates that teachers with higher levels of digital competence tend to exhibit greater self-efficacy in their teaching practices. Positive relationship with technology, particularly in pedagogical skills, predicted teachers' self-efficacy in both traditional and distance learning environments. This suggests that as teachers enhance their technological skills, they become more confident in integrating digital tools into their instruction, leading to improved teaching outcomes (Andreou et al., 2022).

Additionally, the enhancement of technological skills encourages teachers to rethink their pedagogical approaches. Familiarity with digital technologies fosters critical and creative selection and utilization of various digital media and learning resources. Such competencies allow educators to develop comprehensive strategies that cater to diverse learning styles and needs, ultimately improving instructional quality (Kholifah et al., 2023).

Nonetheless, the transition to digitized learning modules is accompanied by barriers. Creating professional networks, localized training sessions, and collaborative opportunities can equip teachers with the necessary support to navigate these challenges effectively. The ability of teachers to utilize digital tools is directly linked to their understanding of how these technologies can foster a more interactive and engaging learning environment. Enhanced digital skills empower them to experiment with different instructional strategies that leverage technology, thereby enriching the educational experience and making learning more relevant to today's students. This transition provides educators with a significant opportunity to enhance their technological skills, which are vital for successfully

addressing modern educational challenges.

Suggests Instructional Innovation

Being innovative involves actively seeking solutions to overcome challenges. IT2 and RT3 demonstrated resourcefulness during the transition from printed to digitized self-learning modules. They became more creative and innovative in exploring the new learning platform, developing strategies to effectively engage students in the digital environment. They also invest time and effort in mastering digital tools by attending online webinars and participating in peer mentoring. Finding and curating quality content from open educational resources and free educational resources online to enrich their digital modules and provide diverse learning opportunities for students.

In transitioning from printed to digitized self-learning modules, the participants disclosed that their resourcefulness and creativity had helped them effectively teach. Their teaching skills improved, and they surfed the internet for helpful ideas on appropriate lesson exercises. Resourceful teachers seek out professional development opportunities and online tutorials to develop the required skills; they would also, through exploration and experimentation, realize which of these digital resources best suit their needs and teaching style. They also invest time and effort in mastering digital tools by attending online webinars and peer mentoring, as well as finding and curating high-quality content from open educational resources and free educational resources online to enrich their digital modules and provide diverse learning opportunities for students.

Moreover, studies emphasize that resourcefulness during the transition entails leveraging existing knowledge and skills in new contexts. Teachers were able to develop and implement appropriate instructional designs amidst the pandemic, using their familiarity with digital tools to enhance student engagement and learning outcomes. This adaptability not only enriches the learning experiences for students but also empowers teachers, providing them with a sense of agency and competence in their professional roles. As teachers encounter unexpected digital challenges, their capacity to navigate and repurpose resources becomes essential in maintaining instructional effectiveness (Munastiwi et al., 2022).

In addition, the necessity for resourcefulness is further amplified by the varied access to technological tools and digital resources. Teachers in different socio-economic contexts faced disparities in their ability to utilize digital learning materials effectively, highlighting a need for creative teaching approaches in resource-constrained environments. Such challenges underscore the importance of fostering resourcefulness among educators as a means of ensuring equitable educational opportunities (Ogodo et al., 2021).

Requires Commitment and Dedication

CT1 and IT2 were driven by a strong motivation to enhance their learning experiences. Their dedication led them to actively seek professional development opportunities, explore new technologies, and stay updated on the latest educational trends. Commitment and dedication drive teachers to ensure that all students succeed in the digital learning environment. During the pandemic, teachers have had to adapt to teaching remotely, and many have sought training to enhance their skills and prepare for the challenges. In a normal situation, teachers expect learning new teaching skills like this to increase teacher motivation.

During the pandemic, teachers have had to figure out how to teach distance learning, and many have engaged in training to improve their performance and ensure they are ready for the challenges. In a normal situation, teachers expect learning new teaching skills like this to increase teacher motivation.

Moreover, research highlights the positive relationship between teachers' pedagogical knowledge and their levels of intrinsic and extrinsic motivation. A robust correlation was found between enhanced pedagogical knowledge in using digital tools and increased motivation levels among educators. This insight emphasizes that as teachers improve their understanding of integrating technology into their teaching practices, their motivation to engage with these tools and inspire their students also increases. The perceived efficacy of their instructional methods not only motivates the educators themselves but also positively impacts student motivation and engagement (Montilla et al., 2023).

The context of the COVID-19 pandemic has provided unique insights into teachers' motivation and resilience. During this period, many teachers faced unexpected challenges that required quick adaptation to remote teaching practices. Studies indicate that despite these stressful conditions, intrinsic motivations remained a key driver for educators to continue improving their digital skills and teaching methodologies. This motivational spirit, driven by the necessity of engaging students effectively in altered learning environments, illustrates the critical role of teachers' determination to succeed amid adversity (Pânișoară et al., 2020).

Promotes Sustainability and Efficiency

One of the reasons why the participants chose digitized self-learning modules is that they said that it is cost-saving. CT1, IT2, RT3, and HT4 have common lessons learned in transitioning from printed to digitized self-learning materials. They believed that programs on digitization lessened the demand for printing. Teachers are not obliged to have printed modules for every student. For the parents, the school, and the teachers, it saves effort, time, and money. Purchases of the bond paper, inks, and printers were cut. Digitization not only saves funds or money, but it also saves time and effort. As to the participants, it lessens tedious classroom tasks and workloads. The transition from printed to digitized self-learning modules has ushered in a new era of educational practices, where cost-

effectiveness emerges as a significant insight gained by educators. Understanding the financial implications of this transition is crucial for both educators and educational institutions that seek sustainable models of teaching and learning.

Moreover, the cost-effectiveness of digital self-learning modules arises from the reduction in expenses associated with physical materials. Adopting digital formats minimizes printing, shipping, and storage costs associated with physical books and resources. Educational institutions are compelled to invest in e-learning to enhance competitive advantages, suggesting that digital resources can lead to long-term savings while maintaining educational quality. Furthermore, digital format allows for frequent updates and distribution of materials without incurring additional costs. This flexibility contrasts sharply with printed materials, which can quickly become outdated and expensive to replace (Ghadah et al., 2023; Volkovitckaia et al., 2020).

One of the primary benefits of transitioning to digital resources is the potential for cost savings. Research indicates that digital learning materials, such as e-books and online modules, can significantly reduce costs associated with traditional print materials. The sustainability aspect of digital learning cannot be overstated. The integration of digital materials aligns with growing concerns regarding environmental sustainability and resource management. E-books offer advantages over printed books, including lower production costs and the ability to update content easily, which enhances their relevance and reduces the financial burden of reprinting physical texts (Mulhim & Zaky, 2023).

Therefore, the transition from printed to digitized self-learning modules provides educators with significant insights into the cost-effectiveness of modern educational practices. By embracing digital learning resources, educational institutions can achieve substantial savings while enhancing instructional quality and sustainability. As teachers and administrators adapt to this new landscape, an emphasis on the economic advantages of digital education will be crucial in shaping future teaching methodologies and ensuring the overall success of educational reform initiatives. As educators gain proficiency in utilizing digital resources, their ability to deliver effective instruction enhances, further solidifying the investment in technology as a cost-effective strategy for education.

Embraces Digitization to Enhance Learning

This theme was demonstrated by HT4. As she moved away from traditional methods, she learned to navigate and use various digital platforms and tools, which involves overcoming a learning curve, especially for those less familiar with advanced technologies. This transition not only helped her become digitally literate but also enabled her to create more personalized and interactive learning experiences for the students, incorporating multimedia elements and virtual engagement. This transition has allowed her to engage more effectively with students, thereby enhancing the overall learning experience through various digital tools and platforms. The integration of digital technologies has transformed teaching methodologies and provided her with innovative ways to connect, assess, and motivate students.

One key benefit of digitization is the ability to utilize a diverse array of digital tools that cater to various learning styles and preferences. Grosseck et al. assert that digital assessment practices have become integral to the teaching process, allowing for diverse educational tools such as 3D and AR environments, which promote interactive and engaging learning experiences (Grosseck et al., 2023). Additionally, Naidoo reports enhanced mathematics education experiences through the effective incorporation of digital platforms that support collaborative learning and resource sharing (Naidoo, 2020). These tools enable teachers to innovate in their instructional approaches, facilitating a shift towards participatory and engaging teaching models (Honcharuk et al., 2024).

Furthermore, digitization allows for real-time feedback mechanisms and the automation of administrative tasks, which can significantly reduce teachers' workloads and enhance their ability to focus on teaching (Maryani et al., 2023). The increased efficiency and effectiveness of communication facilitated by digital tools fosters deeper interactions between instructors and learners (Zhang, 2023). Alenezi and Akour highlight that embracing digital education technology can strengthen school management, contributing to a more dynamic educational environment that meets the demands of the 21st century (Alenezi & Akour, 2023).

Moreover, incorporating innovative teaching methods like project-based and inquiry-based learning strategies has been shown to increase student engagement and motivation (Honcharuk et al., 2024). Teachers benefit from access to various multimedia resources, which enhance their presentation methods and help maintain students' interest throughout the learning process (Bucăţa & Tileagă, 2024). This technological integration not only facilitates better student outcomes but also helps educators align their teaching with contemporary educational standards and expectations (Wang et al., 2023).

Furthermore, educational institutions that actively embrace digital transformation are better positioned to adapt to changes in the educational landscape, as highlighted by Özdemir et al. (2024), who emphasize the importance of organizational leadership in establishing an effective digital transformation model. The ongoing development and application of digital technologies necessitate continuous professional development for educators, ensuring they are well-versed in the best practices surrounding digital tools and techniques (Khalil, 2020).

Conclusions

In conclusion, the study revealed that teachers faced significant challenges in transitioning from printed to digitized self-learning modules, particularly in terms of limited technical resources, digital competency, and unequal access to technology. Despite these

hurdles, educators demonstrated resilience by adopting coping mechanisms such as flexibility, openness to change, positive thinking, and peer mentoring. Through this transition, teachers not only enhanced their digital skills and instructional strategies but also discovered the potential of digitization to promote sustainability, efficiency, and student engagement. Ultimately, the study underscores the importance of continuous professional development and institutional support to ensure that digital transformation in education is effective, equitable, and sustainable.

The outcomes or findings of this study were unable to develop any generalizations for other concerned and relevant individuals based on the experiences revealed by the four participants. As a result, further research pertinent to this study should be done at other research sites and with other purposively selected participants to validate and compare the noteworthy findings. Furthermore, some future researchers may perform related studies to see if there are any significant differences in how participants overcome challenges and gain lessons learned during the transition from printed to digitized self-learning modules. Lastly, to better understand the current phenomenon, schools may conduct a study to determine the challenges they are facing as an institution and the opportunities they improve the school's service. Future research should target the development of effective training mechanisms, investigate barriers to implementation, assess the design of digital learning modules, and explore qualitative aspects of teachers' experiences. Such focused studies will not only enhance teachers' capacity for integrating digital technologies into their practice but also ultimately enrich the learning experiences of students progressively.

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