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## **Exploring the Challenges and Recommendations Currently Affecting Technology Integration in Educational Settings**

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**Abstract:** The integration of digital technology in academic settings has risen significantly since the start of COVID-19. However, the teaching and learning process has also been impacted as teachers had to comply and meet the high demands and expectations of meeting each learner's needs digitally. In addition, educators currently face obstacles that hinder them from effectively implementing and merging technology into their practice. This literature review aims to uncover the current challenges in digital integration and to discuss recommendations given by the authors cited. In efforts to guide our research and review of sources, we considered two questions: What are some of the challenges currently affecting technology integration in educational settings? And what are the recommendations found in the literature? To remain current and up to date in our post-COVID-19 pandemic era, we reviewed 28 sources, consisting of 23 peer-reviewed articles, three reports, one book, and one dissertation from 2018-2023. While reviewing the literature, we exposed four common themes affecting technology integration in educational settings. The four themes addressed in this review are Digital Equity for All, Teacher Competence, Resistance to Change, and Building Teacher Capacity.

The landscape of education has undergone a significant transformation in recent years, driven largely by the integration of technology into teaching and learning practices. This shift, while accelerated by the COVID-19 pandemic, has its roots in educational initiatives long before the global crisis. However, the pandemic acted as a catalyst, exposing gaps in digital infrastructure and prompting a reevaluation of how technology should be

used to promote equity and access to education.

Before the onset of COVID-19, technology integration was largely seen as a supplemental tool, with its adoption driven by local officials. Research from educational technology highlights that, prior to 2020, the focus was on enhancing traditional teaching methods with technological tools, rather than a full-scale

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The authors of this article are a dedicated team with a shared passion for integrating technology into education and supporting teacher success. This research project reflects their commitment to enhancing teaching and learning through the effective use of technology, while equipping educators with the tools and strategies they need to thrive in a rapidly evolving digital landscape.

reliance on digital platforms (Li et al. 2018, Inan & Lowther 2010; Rodríguez et al. 2012). However, the sudden shift to asynchronous learning during the pandemic revealed deficiencies in this approach. In response, the U.S. Department of Education took significant steps to address these challenges, including allocating billions of dollars to ensure affordable access to digital equity. With the triangulated efforts of multiple organizations, the road to digital equity is gradually being made.

Information and Communication Technology (ICT) in the United States is woven into Educational Policy and embedded in the curriculum. UNESCO (2022) defines ICT as a diverse set of technological tools and resources to transmit, store, create, share, or exchange information. The use of ICT in the classroom is at the forefront of educational debates across the globe. Criticisms range from digital literacy to digital equity. Teachers argue they need additional professional development to develop competencies and effectively use the newest technology in their lessons. Because of this inadequacy, they have resisted using new technologies; however, the U.S. Department of Education is on the opposite side of this conversation, pushing the integration of technology into every classroom.

Consequently, this review was guided by two central questions: What are some challenges currently affecting technology integration in educational settings? And what are the recommendations found in the literature? Therefore, this document

seeks to identify the factors presently affecting technology integration in educational settings and explore the advice in the literature that might help alleviate said problems.

## **Methods**

After reading the article “Advancing Digital Equity for All: Community-Based Recommendations for Developing Effective Digital Equity Plans to Close the Digital Divide and Enable Technology-Empowered Learning” from the US Department of Education published in September 2022, we identified that some of the most pressing barriers currently affecting technology integration are as follows: Digital Equity for All, Teacher Competence, Resistance to Change, and Building Teacher Capacity.

Several procedures were conducted to ensure a high-quality literature review on current challenges for effective technology implementation in educational environments. The first step was to search peer-reviewed articles within 2018-2023 comprehensively; studies before 2018 were excluded. A wide range of key terms was utilized during the search, including technology integration, ICT challenges, technology teacher competencies, technology teacher skills ICT, technology capacity building, technology professional development, ICT resistance to change technology, technology adaptability, digital equity, and technology equity.

The academic databases used to identify the sources included EBSCOhost, Eric, and Google Scholar. Additionally, the

reference section of the articles cited was consulted to identify additional sources. Consequently, 28 sources were included in this review: 23 peer-reviewed articles, three reports, one book, and one dissertation. The themes addressed in this review are Digital Equity for All, Teacher Competence, Resistance to Change, and Building Teacher Capacity.

**Table 1**  
*List of sources included in the review*

Authors	Methods	Source	Type	Theme
Al Enezi et al. (2022)	Qualitative	Canadian Center of Science and Education	Journal Article	Resistance to change
Alanoglu et al. (2022)	Quantitative	Education and Information Technologies	Journal Article	Resistance to change
Borthwick (2022)	Framework	International Society for Technology Education	Book	Building teacher capacity
Cabero et al. (2020)	Quantitative	Revista Electrónica Interuniversitaria De Formación Del Profesorado	Journal Article	Technology Competencies
Desimone (2023)	Mixed-methods	Professional Development in Education	Journal Article	Building teacher capacity
Erstad et al., (2021)	Review	Nordic Journal of Digital Literacy	Journal Article	Technology Competencies
Hedger, J. (2022)	Review	NASBE	Report	Digital Equity for All
Hubers et al., (2022)	Review	Professional Development in Education	Journal Article	Building teacher capacity
Kohnke (2021)	Mixed-methods	Online Learning	Journal Article	Building teacher capacity
Leem & Sung (2019)	Quantitative	British Journal of Educational Technology	Journal Article	Resistance to change
Lomba-Portela et al., (2022)	Qualitative	Education Sciences	Journal Article	Resistance to change
Marwan & Sweeney (2019)	Qualitative	The Asia-Pacific Education Researcher	Journal Article	Resistance to change
Mufidah et al. (2022)	Quantitative	Journal Teknik Industri	Journal Article	Resistance to change
Muinde & Mbataru (2019)	Mixed-methods	International Academic Journal of Law and Society	Journal Article	Technology Competencies
Nath (2019)	Quantitative	Education and Information Technologies	Journal Article	Resistance to change
National Forum on Education Statistics (2022)	Review	NFES	Report	Digital Equity for All
Ndebele & Mbodila (2022)	Mixed-methods	Education Sciences	Journal Article	Resistance to change

Authors	Methods	Source	Type	Theme
Office of Educational Technology (2022)	Review	OET	Journal Article	Digital Equity for All
Papakostas et al. (2022)	Quantitative	International Journal of Human-Computer Interaction	Journal Article	Resistance to change
Reyneke (2020)	Mixed-methods	Pepperdine University	Theses and dissertations	Resistance to change
Scherer & Teo (2019)	Review	Educational Research Review	Journal Article	Resistance to change
Tejada & Pozos (2018)	Review	Profesorado, Revista De Curriculum y Formación Del Profesorado	Journal Article	Technology Competencies
Tiede et al. (2022)	Quantitative	iLRN	Journal Article	Resistance to change
Topping et al. (2020)	Review	University of Dundee	Journal Article	Resistance to change
Valtonen et al. (2020)	Quantitative	Education and Information Technologies	Journal Article	Technology Competencies
Weaver (2022)	Review	Digital Promise	Report	Digital Equity for All
Zhang (2022)	Review	Frontiers in Psychology	Journal Article	Building teacher capacity
Zhang et al. (2022)	Mixed-methods	Journal of Computers in Education	Journal Article	Technology Competencies

## Findings

This design focuses on the landscape of the latest research on some of the most pressing issues regarding technology integration in learning environments. The challenges identified are Digital Equity for All, Teacher Competence, Resistance to Change, and Building Teacher Capacity. A total of 28 sources were identified: 23 peer-reviewed articles, three reports, one book, and one dissertation are included in this review article. 100% of the articles reviewed are from after 2018. Most studies were published in 2022-2023, 57% regarded as the Post-COVID era. Furthermore, 22% were published during the peak Covid-19 era in 2020-2021. Additionally, 21% of the reviewed sources were published between 2018-2019.

Furthermore, 14% of the studies were consulted for the theme of Digital Equity, 21% for the theme of Technology Competencies, 46% on Resistance to Change, and 18% on Building Teacher Capacity. The studies consulted gave current insights and recommendations on this review's overarching themes.

## **Results**

### ***Theme One: Digital Equity***

After the COVID-19 pandemic and mass school closures, the United States quickly learned that Information and Communication Technology (ICT) was no longer a luxury but a necessity. Before COVID, integrating technology into lessons was considered an enhancement to the classroom to improve lesson delivery and engage students in learning. Many schools needed access to the internet or had slow connectivity. Internet availability in schools rapidly expanded in the late 1990s and 2000s and is now an essential feature of education facilities, including classrooms, central offices, and school administrative offices (National Forum on Education Statistics, 2022).

Today we understand that ICT is an integral curriculum component to prepare students to compete in the digital society. Mass school closures during the pandemic exacerbated the need for digital equity in private homes. Although most homes had access to the internet and at least one shared device, most lacked the necessary connectivity speed to download and run significant applications. Hedger (2022) believes that by accelerating technology

adoption for virtual learning, the pandemic spotlighted long-standing inequities in digital access, especially for Black, Hispanic, and low-income K-12 students. Heger highlights the efforts of different states to close the digital equity gap between low socio-economic and more affluent groups.

Technology is changing society expeditiously, and all families must have access to digital devices and the education needed to operate them properly. The United States invested \$65 billion in digital equity and inclusion through the Infrastructure Investment and Jobs Act (IIJ) (Weaver et al., 2022). Additionally, the Department of Education's Office of Educational Technology (OET) developed a strategy to ensure digital equity for all and gave birth to the Digital Equity Education Roundtable (DEER). The DEER initiative seeks to close the digital divide and enable all learners in PK-12, higher education, and adult education to unlock technology-enabled opportunities for learning and fully participate in a digital society (Office of Educational Technology, 2022). The discussions at the roundtable are set to identify and mitigate barriers to technology access.

Digital equity is achieved when all individuals and communities have the information technology capacity needed for full participation in the society and economy of the United States (Office of Educational Technology, 2022). National Forum on Education Statistics (2022) states that digital equity is necessary for civic and cultural participation, employment, lifelong learning, and access

to essential services. Weaver (2022) explains that digital capacity is a prerequisite for full participation in society and the economy; thus, digital equity can only be achieved once everyone has access to high-speed internet.

OET has partnered with local communities to provide digital resources and education to achieve the goal of digital equity. Several states made strides toward digital equity in schools by spearheading efforts to collect data, collaborate with partners, buy digital devices and infrastructure, and reimagine effective technology use (Hedger, 2022). These devices were distributed through organizations such as schools and libraries. Despite concerted efforts, many families neglected to take advantage of these opportunities. This lack of participation could have been caused by the failure to inform the community of the available resources. The Affordable Connectivity Program (ACP) is a federal program to help eligible households pay for internet service. This program gives up to a \$30 discount to eligible families that apply and double for those who live on tribal lands. Income-based programs work well for the economically disadvantaged. However, they tend to neglect those who earn slightly above the maximum earning limit, causing these income groups to choose lesser bandwidths due to the financial burden. The OET continues to partner with other government agencies to close the digital equity gap. According to the Office of Educational Technology (2022), most school districts saw less than 10 percent of unconnected households enroll in free broadband programs that would provide them with the connectivity

needed to participate fully in this digital society.

### ***Theme Two: Technology Competencies***

Technology affects every aspect of our lives, and education is no exception. Many schools consider online learning a permanent teaching approach in addition to traditional classroom instruction, especially in the wake of the pandemic. Nevertheless, although most institutes have used online teaching over the previous year, they still need a structured strategy for virtual learning (Erstad et al., 2021).

Moreover, changing teaching practices around ICT requires a significant investment in developing new teacher digital skills and training teachers to teach differently using ICT, in addition to putting computers in classrooms or computer labs and employing them for (a) training students in computer use; (b) some add-on Web-based activities; or (c) having students use student-centered, individualized learning games. The disadvantage of this argument is that instructors in many nations need more topic knowledge to teach even fundamental academic abilities to primary school students; hence, offering this type of training to teachers takes much work.

Given this reality, digital competence has recently acquired relevance in the educational sector (Tejada & Pozos, 2018). On the one hand, the use of technology has become commonplace; on the other hand, the professional growth of many citizens is increasingly dependent on

the efficient and suitable use of ICT. Cabero et al. (2020) state that digital competence is one of the critical competencies that citizens in general, and teachers in particular, must master in the future society.

Despite enormous resources dedicated to integrating technology in the classroom, many teachers have suffered from disturbances brought on by devices, had their work adversely impacted, or have yet to utilize technologies successfully. Among the most significant barriers affecting ICT in the classroom is the need for the proper teacher competencies, technical skills, and expert technical support staff.

Teachers were found to need adequate knowledge and skills and were hesitant to alter and incorporate extra learning linked with computers into their teaching techniques. As a result, there needs to be more teacher acceptance and implementation of ICT. According to Zhang in 2022, teachers who do not use computers in the classroom cannot adequately educate their students in the twenty-first century.

Research findings support the notion that technological comfort relates to technology use (Valtonen et al., 2020). Therefore, teachers need adequate training, as most teachers must more effectively apply ICT in teaching-learning. Furthermore, teachers were hesitant to embrace new technologies and were rarely observed utilizing ICT in their classrooms. Consequently, modern technologies must be introduced into the classroom, and

teachers must be instructed on how to use ICT. Teachers are frequently aware of which students need to be more technologically literate. Educators should establish digital literacy programs that help students improve their technology skills. Several schools offer after-school programs that teach students and parents computer skills.

A new era of ICT in education needs to be developed to parallel the rate of technology development comparable to the capabilities of students and teachers. According to Muinde and Mbataru (2019), teachers need ongoing exposure to ICTs to assess and choose the best materials. However, it is believed that developing effective teaching methods is more crucial than ICT technical proficiency. To keep abreast with the fast-changing nature of technology, schools must invest in and implement ongoing training and continual professional development. Teachers must participate in continual training to become confident users of ICT in the classroom. Teachers should be aware of the advantages of digital literacy, and ICT training must be recognized as vital for teaching such abilities and as a facilitator of other teaching and learning techniques.

### ***Theme Three: Resistance to Change***

Another factor affecting technology integration into the classroom is teachers' attitudes. According to Leem and Sung (2019), "If teachers have negative beliefs concerning the use of technology in the classroom, these perceived characteristics concerning technology may be a barrier to their use in the classroom" (pg. 603).

Consequently, if teachers refrain from using technologies in their practice due to their attitudes, students will have limited exposure and opportunities to develop their skills.

When implementing new ideas or technologies in the classroom, encountering resistance from educators is a familiar thing. Nonetheless, rapidly incorporating new technologies into our societies and learning environments has only increased teachers' adaptation challenges. Some teachers still favor traditional educational philosophies and resist the change of integrating more technology into the lessons they incorporate into their classes (Alanoglu et al., 2022). Consequently, digital literacy skills are negatively affected due to the need for teachers' receptivity in implementation.

Teachers' attitude toward using ICT has directly impacted their utilization of these technologies. Teachers are more willing to adopt instructional and application software if they believe it will benefit their profession and performance. The research reveals that perceived usefulness is the most potent factor directly influencing attitudes and intentions to utilize ICT (Topping, 2020).

Teachers have different acceptance levels for technology integration in their classrooms, some might welcome technology with open arms, but others demonstrate 'resistance to change and negative attitudes' when it comes to implementation. A recent study substantiates that intrinsic motivation

plays a more significant role than extrinsic motivation in technology integration (Reyneke, 2020). Therefore, if teachers resist change or have a negative attitude regarding technology integration, their intrinsic feelings will present a barrier when incorporating technology into the learning environments at their charge.

Furthermore, Scherer and Teo (2019) conclude that there is a significant positive relationship between perceived ease of use and the intention to use technology for teachers regarding lesson implementation. However, other studies suggest that even though teachers might see the usefulness of technology in their daily lives, they might still resist technology integration in their classrooms (Marwan & Sweeney, 2019; Nath, 2019; Papakostas et al., 2022).

As a way to address the issue of teacher's resistance to change, Lomba-Portela et al. (2022) conclude that "teachers need continuous training that allows them the capacity for self-criticism and flexibility, as well as openness to the transformation of their teaching practice and the universal design of teaching-learning processes" (pg. 10).

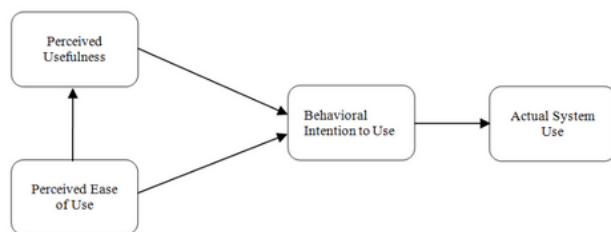
Moreover, Alanoglu and Karabatak (2022) identified that negative teachers' perceptions and attitudes might impact technology integration into the teaching and learning processes. However, the authors suggest possible actions to take to have effective implementation. These include encouraging effective technology plans, developing skills for teachers and students, and adopting suitable strategies

to support technology-enhanced teaching.

Other recent studies addressing teachers' resistance to technology integration utilize the Technology Acceptance Model (TAM) to identify critical factors. Different studies explain that TAM is an influential theoretical framework used to interpret the factors affecting people in their acceptance of technology and utilize it to guide their investigations (Al Enezi et al., 2022; Mufidah et al., 2022; Ndebele & Mbodila, 2022; Tiede et al., 2022).

**Figure 1**

*Technology Acceptance Model*



Ndebele and Mbodila (2022), after utilizing TAM to frame their investigation, recommend intensifying training in the use of technology for teaching and learning processes, having support systems for educators to integrate technology into their lessons, and establishing collaborating communities to help increase educators' acceptance of technology integration into their learning environments. These recommendations were identified in the literature and might help diminish negative attitudes and teachers' resistance to integrating technology in their classrooms.

#### ***Theme Four: Building Teacher Capacity***

When considering technology integration

and the professional development teachers need, thought should be given to the best ways to improve student learning and the advances from previous research on teacher preparation programs and professional development. Professional development has evolved over the past several decades. Desimone (2023) mentions that the focus in the 1970s-1990s was to have a "one-shot" full-day workshop. During this era, a survey gauging the teachers' enjoyment of the training evaluated professional development.

Then, the early and mid-2000s was a transformative period in professional development research. During this time, the researchers concluded that professional development must include five necessary features for effective implementation: a focus on content or how students learn content, opportunities for active learning, participating collectively with other teachers, ensuring coherence with school and organizational-level mandates and teacher beliefs, and learning activities of sufficient duration to allow practice and feedback (Desimone, 2023).

In the 2000s-2010s, once again, researchers studied the effects of teacher training and conducted randomized control trials. These trials determined that 'principal support, individualization, and teacher buy-in' were critical in implementing ideas and practices targeted at professional development (Desimone, 2023). These statements show that professional development will continue to evolve, and the focus should be on building teacher capacity and improving



student learning and growth. However, now, the emphasis should be on technology integration.

In a recent study, the authors mention that early attempts at technology integration focused on learners and how they could harness new digital tools and programs for new learning (Borthwick et al., 2022). In this example, students learn with technology and not from technology. At the same time, others believe that learners should focus on the technology itself rather than on the teaching and learning that technology enables (Borthwick et al., 2022). Either way, teachers need the skills and framework to be effective and knowledgeable to keep up with technological innovation and world demands. According to Borthwick et al. (2022), the focus should be on the teacher as the central adopter and agent of change, and there needs to be more attention in this area in the form of teacher preparation programs. When the focus is set on how impactful, well-trained, and developed our educators need to be versus systemic factors on technology integration, there will be a change in pedagogical technology practices. A teacher preparation framework "...emphasizes redesigning experiences, systems, and cultures of the teacher education systems rather than focusing on stand-alone technology integration courses and tool-specific applications" (p. 20). With this framework, teacher candidates should be supported throughout their preparation journey to be proficient in teaching and integrating technology into the teaching and learning process.

Although preparation programs must change, Hubers et al. (2022) state that "it is often unclear whether they result in sustainable changes in the educational practice. However, studies investigating the sustainability of such professional development initiatives have shown thin or disappointing results" (p. 828). The authors argue that after attending professional development, most teachers often only make superficial changes in their teaching behaviors or revert to their old teaching methods and practices.

Hubers et al. (2022) study aimed to determine if teacher preparation programs meet the high demands and expectations when considering science and technology integration. They studied four programs and their characteristics and determined which essential characteristics are necessary for effective program implementation. They focused on pedagogical knowledge about science and technology, engaging activities for teachers, collaboration with colleagues and school leaders, reliable content, duration of the program, coherence with the school context, addressing the school's organizational factors, and differentiation for each teacher. The authors suggested that future studies should address the gaps between the role of the school context and the program. There must be an understanding of "why change works, for whom it works, and in what context" (p.842).

Another study by Kohnke (2021) involves a questionnaire and semi-structured interviews. The questionnaire was given to

58 teachers, and 12 of them participated in the follow-up semi-structured interview. The findings indicated that participants found sharing sessions relevant, well-planned, and immediately applicable to their teaching context. They appreciated the interpersonal interactions. Another aspect highlighted by participants was the possibility of attaining practical experience with technology, which numerous participants expressed a desire for (Kohnke, 2021).

This study demonstrates the importance of getting educators involved in decision-making when developing professional development and the areas where they want to grow in their careers. The teachers favored more informal types of professional development and are interested in enhancing their ICT skills and tools. The study also revealed the disconnect between teacher preparation programs and universities with what teachers want to become more proficient in to enhance their competencies. Furthermore, Kohnke (2021) suggests that administrators should allow teachers to become actively involved in determining their pedagogical goal and the most effective way to integrate ICT and transfer the newly acquired skills.

The future of professional development and the integration of digital technology in education is uncertain and ever-changing. However, it is known that technology merging and advancing in academic and educational settings continues to rise. According to Zhang (2022), professional development can assist teachers in building their knowledge and meaning of

technology integration in education and helps to adjust their practice to impact education positively. Learner needs and technology levels are increasing rapidly; thus, educators must continuously find innovative ways to engage and interact with technology effectively to meet their students' needs. Zhang (2022) suggests that educational program planners that partake in organizing the training programs "...ought to offer a setting rich in technology for futuristic educators and engage them in tasks that assist them in expanding techno-pedagogical education content that will finally bring about improved learning results" (p.5). Another consideration the author mentions is to consider the challenges and demanding situations that teachers already encounter and ease the technology merging process through professional development education.

## **Discussion**

This review aimed to explore current challenges affecting technology integration in educational settings and the recommendations applicable in a post-COVID era. Because we are still dealing with rapid technological innovation and increasing academic demands, there is a strong need for current research on ICT integration in educational settings. Because of this, 28 studies ranging from 2018 to 2023 were collected and analyzed. Four main themes emerged to help us understand the challenges and recommendations of technology integration in educational settings. Together, these studies illustrate the current landscape and raise concerns and

recommendations for researchers and practitioners.

The challenge of 'Digital Equity' still is a concern as vulnerable populations such as low-socioeconomic groups are the most affected. Despite governmental efforts to alleviate disparities in digital accessibility, many eligible families did not take advantage of the opportunities. Therefore, the efforts to provide 'Digital Equity' are still in the early stages. More monitoring and research on this topic are necessary.

Another critical issue in ICT implementation is 'Technology Competencies', as the findings suggest that teachers do not have the technical competencies and skills to integrate ICT successfully in their educational settings. It is recommended that educational institutions implement ongoing training and continual professional development to stay current with the fast-changing nature of technology.

Resistance to change was another theme identified; teachers' attitudes regarding technology correlate with ICT implementation. If a teacher has a negative attitude toward technology integration, it will become an obstacle to technology integration into their lessons. Support systems for teachers, such as collaborative communities, were recommended to reduce negative attitudes and teachers' resistance to integrating technology into their lessons. Further research into these support systems' effectiveness should be explored in more detail.

The theme 'Building Teacher Capacity' is a recurrent solution to address current challenges of ICT in the classroom. However, studies suggest that professional development should go further than one-session training, favoring ongoing efforts to expand the expertise to have effective techno-pedagogical education. The literature recommends involving teachers in decision-making about their learning and the different ways to incorporate ICT in their lessons.

These challenges, along with the recommendations found in the literature, uncover some of the actions that must be taken to improve ICT integration into educational settings. However, due to the constant technological innovations and the different implementations of ICT in the classroom, ongoing research on each of these themes is proposed.

## **Conclusion**

To decelerate the COVID-19 pandemic's spread, schools all across the world had their doors closed for several months. Many widespread initiatives to use technology to facilitate remote learning were implemented throughout this crisis. This dilemma also revealed the difficulties associated with using technology in education, including numerous disparities that begin with a lack of access to computers and the Internet. The COVID-19 pandemic has provided significant insights into how the role of technology can fundamentally shift to reach students and how to modify learning processes under challenging times due to its far-reaching impact. Technology in education

is a concept that has been introduced previously, yet more knowledge is needed about ICT in the education profession. Effective ICT implementation has various limits, including ensuring that every child has access to electronic devices. Nevertheless, this problem should improve with more organizations investing in digital equity.

This review shows that the amount of research on ICT has increased significantly and exponentially over the past ten years, especially in recent years. This literature review adds to earlier reviews like those by Rodriguez-Garca et al. (2019) and Esteve et al. (2020), which show that the need for highly digitally proficient teachers has made the study of digital competencies a potent area of study right now. In addition, this review reveals that some crucial difficulties in using technology in educational settings include digital equity, technology competencies, resistance to change, and building teacher capacity.

The findings of this study would be a valuable lesson for the institutions and the faculty members to continue their teaching-learning processes by addressing the challenges and issues that happened in any challenging conditions when the lockdown ended in most countries. The emerging nations still have a long way to go to catch up to the wealthy nations regarding resources, making it harder for them to handle urgent circumstances. We must concentrate on bridging such digital disparities to guarantee that digital technology delivers equitable and accessible access to education. Even

where online access is reasonably priced, more steps are required to give excluded people more power.

Additionally, despite most teachers having a basic understanding of computers, we found a problem with technological integration since there needed to be more pedagogical understanding to incorporate technology into the curriculum successfully. Teachers must participate in regular professional development (PD) activities and get training beyond teaching them how to use basic digital programs. Teachers should receive training on promoting student collaboration by sharing technological resources and teamwork when a shortage of devices is unavoidable. The problem of teacher stress and anxiety associated with educational technology has expanded tremendously and was noted during the research process.

Moreover, disparities between current research and those conducted a few decades ago have been found. Hence, later research in the field has helped to reformulate worries from years before. In addition, new issues and concerns have threatened the reliability with which educators use technology and the standard of teaching and learning procedures. This is the way to decrease teachers' levels of stress, anxiety, and aggravation when utilizing instructional technology. Training is crucial to ensure that teachers are sufficiently qualified to handle the difficulties of the teaching process.

Furthermore, teachers are the link between school administration and students; they

are familiar with students and strongly understand their needs and talents. While establishing programs that encourage equitable access to technology for their students, school officials should collaborate with teachers. They should ensure that they consult with the appropriate teachers who supervise students in the area the effort intends to remedy.

Therefore, the results of this study are advantageous in identifying the recommendations found in the current literature for solving the difficulties within the constraints of technology implementation in educational settings.

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