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RESEARCH PAPER

The Digital Divide in Early Childhood Education: A Study of ECE Teachers' Perceptions

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ABSTRACT

This study investigates the experiences of early childhood educators (ECEs) in Pakistan, examining the disparity in technology use between public and private schools. Employing Rogers' Diffusion of Innovation and Davis' TAM theories, the research explores teacher perceptions of technology, access to technology resources, and its integration into classrooms. A survey was conducted in tehsil Shorkot, District Jhang, with 250 ECEs (125 each from public and private schools). The findings reveal a significant gap in technology integration. Private schools have superior resources, more technology-proficient staff, and a more positive attitude towards educational technology. Public schools face challenges with limited resources, lack of teacher training, and resistance to adopting new methods. The study proposes solutions to bridge the digital divide. Recommendations include increased government investment in technology resources for public schools, curriculum updates to integrate technological skills, and comprehensive training programs for teachers.

Keywords: Digital Divide, Early Childhood Education (ECE), Pakistan, Teacher Perceptions, Technology Access, Technology Integration

Introduction

The incorporation of technology into early childhood education (ECE) in the fast-paced digital era brings up exceptional prospects as well as notable obstacles. Innovative educational technologies, such as interactive applications, digital storytelling tools, and online collaborative platforms, have the potential to revolutionize traditional teaching methods. These technologies provide new opportunities for engagement, learning, and development among early childhood education-aged children. This study aims to investigate the diverse function of technology in early childhood settings, analyzing its effects on cognitive, social, and emotional development while also discussing the important issues surrounding screen time, equal access, and the professional development requirements of educators (Gjelaj et al., 2020).

The justification for integrating technology into early childhood education is based on the acknowledgment that digital literacy is an essential competency in the 21st century. Early involvement with technology in a child's life may provide the basis for cultivating critical thinking, problem-solving abilities, and digital literacy as they navigate a more digital society. Furthermore, educational technology can meet the varied learning requirements of students by providing customized learning experiences that assist unique learning styles and progress (Hu & Yelland, 2017).

This study seeks to provide a thorough analysis of the existing research on the use of technology in early childhood education, emphasizing both the advantages and disadvantages of its incorporation. The project will analyze many case studies and empirical data to provide insights into successful practices and methods for integrating technology in a manner that promotes whole-child development. Furthermore, it will focus on the crucial

role of educators in facilitating technology usage, promoting professional growth, and providing support mechanisms that empower instructors with the expertise and understanding needed to navigate the digital environment proficiently (Dorouka et al., 2020).

Education is a crucial aspect in developing human capital and advancing a country's scientific and economic progress (Muzaffar, 2016). Consequently, rapid advancements and improvements in technology have fostered the dissemination of innovation in education. Technology in education can be viewed from two perspectives: Technology as a means of storing and transmitting data, and innovation as a means of advancing development. Education itself can be divided into two aspects: acquiring data and skills and interpreting and generating information. They argue that the concept of our work and leisure time has been altered due to the proximity of information and communication technologies. This change can be addressed since change does not always guarantee favorable outcomes. According to them, early childhood education has also begun to reflect this transition, but in different ways (Hoareau et al., 2021).

Although there are several studies related to the use of technology in early childhood education, more research needs to be done, specifically focusing on the role of teachers in this context, particularly in comparison to other areas of early childhood education. If, as shown by these new studies, technology presents great opportunities to enhance young children's learning, then the whole role of technology in early childhood education must be effectively communicated and thoroughly examined (Ghavifekr et al., 2016).

In addition, by exclusively offering schools and early childhood centers that prioritize computerized technology, there is a significant disparity in enhancing children's learning through advanced methods. Teachers may need to be adequately equipped or experienced in utilizing technology for the benefit of children in a manner that is both intentional and beneficial. Children's engagement with technology and the knowledge they bring to early childhood education or school settings may often need to be noticed, resulting in missed opportunities for learning through these avenues. In order to comprehend the possibilities for children's learning and to assess the sometimes overlooked responses and engagement with technology, it is necessary to explicitly identify and study this role (Konca & Erden, 2021).

There has been a recent and substantial debate on the use of technology in early childhood education and whether it is an appropriate method for young children's learning. Research suggests that computers are a crucial tool for youngsters to explore topics that would otherwise be very difficult to comprehend. Advocates of this perspective stress the need for teachers to develop a deep understanding of how technology may be effectively exploited (Romero-Tena et al., 2020).

According to the research conducted by Hue and Ab Jalil in 2013, educational frameworks worldwide are effectively incorporating new technology tools into educational programs. These tools aim to provide alternatives for the information and skills needed in the 21st century. Several studies have stressed the importance of using usage as a criterion for enhancing quality in the teaching and learning process. Previous investigations have recognized the significance of government training institutions in using data and communication advancements to enhance instructional capabilities and adaptability worldwide. Similarly, it has been verified that the use of technology for educational purposes yields favorable outcomes in terms of enhancements, such as increased motivation, provision of efficient resources, and improved data accessibility (Romero-Tena et al., 2020).

The implementation of technology in combination is a complex process. The research indicates that there are several limitations to using it in the educational learning

process. According to a 2020 study on Bingimals, teachers have a strong desire to include technology in their teaching, but they face many obstacles. The primary impediments were a lack of self-assurance, a lack of expertise, and a lack of resources. The fundamental components of modernization in schools are the lack of confidence, capacity, and accessibility. Teachers may be provided with specific technology assets, tools, and programming resources, as well as access to professional assistance and appropriate time for development. The portion needs to be more appropriate for providing excellent instruction. Regardless, the proximity of all components increases the likelihood of effective integration of technology in educational and learning opportunities (Ogegbo & Aina, 2020).

Literature Review

Potential Benefits of Technology in Early Childhood Education (ECE)

Studies have consistently highlighted the potential benefits of integrating technology into ECE programs. Baharudin et al. (2020) found that activities utilizing technology can enhance children's development in fundamental reasoning, critical thinking, leadership skills, creativity, and social skills. Technology can also capture children's interest and motivate them to learn by providing access to engaging educational games and interactive activities (Konca et al., 2016). Infante et al. (2010) further suggest that technology can facilitate communication and collaboration among students, fostering a more interactive learning environment where students can work together (Infante et al., 2010).

Technology can also empower students to take a more active role in their learning. By providing access to a variety of information sources, technology allows students to explore topics in greater depth and personalize their learning experiences based on their individual needs and interests (Barak, 2006). Technology can be a valuable tool for teacher development as well. By providing access to online resources and professional development opportunities, technology can support teachers in developing innovative teaching methods and integrating technology effectively into their curriculum (Dong, 2016).

Challenges of Technology Integration in ECE

Despite the potential benefits, integrating technology into ECE programs is not without its challenges. One of the most significant challenges is related to teacher attitudes and skills. Teachers' perceptions of technology and their confidence in using it can significantly influence its successful implementation in the classroom (Kerckaert et al., 2015). Additionally, unequal access to technology and infrastructure can create disparities in learning opportunities for children from different backgrounds (Bourbour, 2023). Furthermore, effectively integrating technology into the curriculum requires time and effort from teachers, potentially leading to increased workload and blurring the lines between work and personal life (Waller, 2007).

Nevertheless, the incorporation of technology in early childhood education (ECE) has its challenges. Discussions among educators, parents, and legislators have arisen due to concerns about the excessive amount of time spent using screens. These discussions focus on determining the proper use of technology in early learning contexts. The American Academy of Pediatrics (AAP, 2016) and other organizations have released recommendations to address these issues, highlighting the significance of quality, substance, and context in children's engagement with digital media. Moreover, discrepancies in the availability of technology and digital resources underscore the need for fair and just ways to use technology to avoid exacerbating the growing gap in digital access among young students (Fox-Turnbull, 2019).

Teacher Training and Support

Studies consistently highlight the importance of teacher training in technology use for ECE (Peralta & Costa, 2007; Yildiz, 2011). Teachers' comfort level and confidence with technology significantly impact their willingness and ability to integrate it into their teaching practices (Kerckaert et al., 2015). Research by Yildiz (2011) found that teachers with limited technological knowledge often expressed anxieties and a sense of inadequacy regarding technology integration. Conversely, studies by Peralta and Costa (2007) suggest that teachers with higher levels of engagement with technology tend to exhibit greater confidence in using it effectively in the classroom.

The literature suggests that effective teacher training for technology integration should move beyond basic technical skills (Yildiz, 2011). Several studies advocate for training programs that focus on pedagogical approaches for integrating technology into existing curriculum frameworks (Angeli & Valanides, 2009; Lee & Tsai, 2010). These programs should equip teachers with the knowledge and skills to select appropriate technology tools, develop engaging activities, and assess children's learning outcomes within a technology-rich environment (Angeli & Valanides, 2009).

Beyond initial training, ongoing support is crucial for sustained technology integration within ECE programs (Vygotsky & Cole, 1986). Research by Vygotsky and Cole (1986) emphasizes the importance of fostering a collaborative learning environment for teachers, where they can share ideas, troubleshoot challenges, and learn from each other's experiences. Online communities, professional development workshops, and peer coaching can provide valuable platforms for ongoing support (Yildiz, 2011).

Teacher training and support initiatives should also address common concerns and challenges related to technology integration. Limited time, technical difficulties, and a perceived lack of alignment with curriculum standards are frequently cited barriers (Yildiz, 2011). Training programs can help teachers develop strategies for time management, identify user-friendly technologies, and explore how technology can complement and enhance existing curriculum objectives (Angeli & Valanides, 2009).

Access and Equity Concerns

A significant barrier to technology integration is unequal access to resources. Several studies point to a lack of access to technology, particularly at home, as a major deterrent for teachers incorporating technology into their classrooms (Bourbour, 2023). It is crucial to address these equity concerns to ensure that all children have the opportunity to benefit from technology in the ECE classroom.

Impact on Young Children's Development

The use of technology in Early Childhood Education (ECE) programs has become increasingly prevalent, sparking debate about its impact on young children's development. This literature review explores the potential benefits and drawbacks of technology integration on various developmental domains in ECE settings.

Several studies highlight the potential benefits of technology for young children's development. Research by Baharudin et al. (2020) suggests that technology-based activities can enhance children's development in critical areas like fundamental reasoning, critical thinking, leadership skills, creativity, and social skills. Konca et al. (2016) point out that technology can capture children's interest and motivate them to learn by providing access to engaging educational games and interactive activities that promote exploration and discovery. Infante et al. (2010) further suggest that technology can facilitate communication

and collaboration among students, fostering a more interactive learning environment where children can work together and develop social skills.

Technology can also empower children to take a more active role in their learning. Studies by Barak (2006) indicate that technology allows students to access a variety of information sources, enabling them to explore topics in greater depth and personalize their learning experiences based on their individual needs and interests. This fosters a sense of agency and independence in young learners.

Potential Drawbacks of Technology Integration

The effect of young children's use of technology on their development is a complex issue with ongoing debate. While some studies, such as those by Voogt & McKenney (2017) and Maynard (2010), suggest that technology can enhance learning and exploration when used appropriately, others (Kervin, 2016) have found less clear evidence of positive impacts on academic achievement. Further research is needed to explore the nuances of how technology can be used most effectively to support the development of young children.

Despite the potential benefits, concerns exist regarding the impact of technology on young children's development. One major concern is the potential for excessive screen time to negatively impact important developmental domains. A study by Kervin (2016) found limited evidence for positive impacts of technology on academic achievement, particularly when screen time displaces other developmentally appropriate activities such as physical play and social interaction.

Another concern is the potential for technology to hinder the development of social skills. Face-to-face interactions are crucial for young children to learn crucial social cues, communication skills, and emotional regulation (National Association for the Education of Young Children [NAEYC], 2018). Studies by Voogt & McKenney (2017) suggest that technology use should be carefully managed to complement, rather than replace, traditional social interaction opportunities.

Emerging research suggests that the impact of technology on young children's development is likely contingent on several factors, including the quality of the technology used, the purpose of the activity, and the amount of time spent using technology (Maynard, 2010). Studies by Maynard (2010) suggest that technology can be a valuable tool for learning and exploration when used appropriately and in moderation.

Technology integration in ECE programs offers a range of potential benefits and drawbacks for young children's development. While technology can be a powerful tool for fostering learning, exploration, and collaboration, it is crucial to ensure its use complements and enriches other developmentally appropriate activities. Further research is needed to explore the long-term effects of technology on young children and develop best practices for integrating technology in a way that optimizes and supports children's holistic development. Educators and caregivers should prioritize quality interactions and create balanced learning environments that integrate technology strategically to enhance young children's learning and development.

Frame Work of the Study

The phrase technology encompasses several types of hardware and software, such as personal computers (including desktop and laptop computers), digital cameras and camcorders, cognitive and communication software, and networking devices. It also includes devices such as phones, fax machines, mobile phones, and recording devices, as well as built-in narratives, designated configurations, computer modifications,

programmable toys, control technology, videoconferencing technology, closed-circuit televisions, information projectors, and electronic whiteboards, among others.

The objective of this research was to assess the teacher's perspective on the incorporation of technology in the early years of education. This research provided evidence for two theories of Diffusion of Innovations proposed by Rogers in 2003. Additionally, the TAM (Technology Acceptance Model) developed by Davis in 2003 was specifically used as a conceptual framework for this study. Rogers' theory is nominative because it describes the process by which an invention is transmitted via certain channels and eventually adopted by members of a social organization. The approach might begin by acquiring an understanding of the major channel that embodies the characteristics of the core leadership unit among technology users in order to incorporate the technology effectively. It is important to embrace and incorporate the technology via user acceptance and integration (Marangunić & Granić, 2015).

The TAM model has many components that characterize the process of technology adoption by individuals, including behavioral intention, perceived usefulness, and perceived ease of use. Perceived utility relates to the extent to which individuals feel that a certain technology would enhance work performance and the necessity of the technology being user-friendly. The TAM model is often used to assess the efficacy or success of a technology in understanding the perceived usefulness and perceived risk of a certain framework (Marangunić & Granić, 2015).

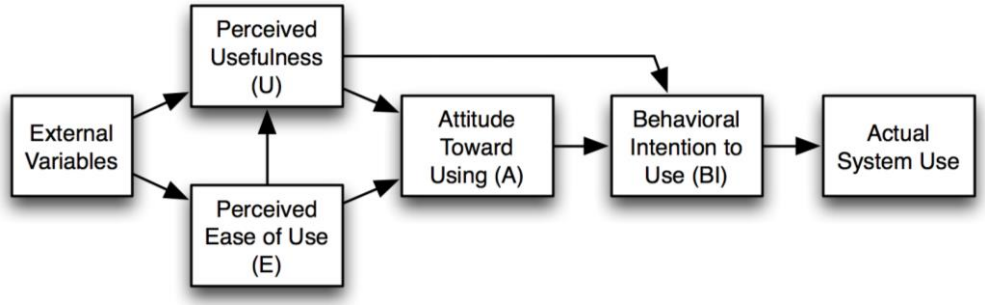

Figure 1: TAM Model (Marangunić, & Granić, 2015)

The research suggests that technology has the potential to be a valuable tool for enhancing the quality of education in ECE programs. Technology can promote deeper learning, increased student engagement, and collaboration. However, successful integration requires addressing challenges such as teacher training, access to technology, and potential negative impacts on workload. Further research is needed to explore the most effective ways to leverage technology in ECE settings while ensuring equitable access and positive learning outcomes for all children.

Material and Methods

The data in this research was collected using a quantitative approach, a survey produced by the researcher. The questionnaire comprehensively covers the goals related to the efficacy of integrating technology, the availability of facilities regarding technology, and the proficiency of teachers in using technology and integrating it into teaching in both public and private schools where early childhood classes were in progress. The survey was sent to teachers to gather data. The study was delimited to only early childhood education teachers in both public and private schools situated in tehsil Shorkot, District Jhang, due to the constraints of time and money. The population of this research consists of teachers employed in both public and private schools in Tehsil Shorkot, District Jhang, in the province of Punjab.

Population

Tehsil Shorkot District Jhang has 248 public schools and 375 private schools. The number of teachers in public schools was 1071, while the number of teachers in private schools was 1350 (Population source: School information system, Punjab 2024).

Sampling

The research was conducted using a sample size of 250 teachers, consisting of 125 teachers from public schools and 125 teachers from private schools. These schools were at the primary level and offered early childhood education. The questionnaire was evenly distributed among both public (125) and private (125) early childhood education teachers. The preference for targeted respondents in this study is those with a teaching background, regardless of their gender, age, teaching experience, academic qualifications, and professional qualifications. Two hundred fifty surveys were issued to teachers in both the public and private sectors. The researcher distributed the questionnaires randomly throughout schools to collect data, which was gathered over one and a half months.

Research Tool

A survey questionnaire consisting of 20 statements was used to assess the teacher's perspective on the incorporation of technology at this level of education in both public and private schools in the province of Punjab. The respondents were asked questions and provided answers using a 5-point Likert scale. The questionnaire is structured into five five-point Likert scale. The first component pertains to the demographic profile of the responder, including their age, gender, institution name, academic qualifications, professional qualifications, experience, and work status. The last four sections of the questionnaire pertain to the teacher's perspective on the integration of technology. Part one consists of 8 statements about the efficacy of technology. Part two consists of 7 statements regarding the facilities provided by technology. Part three consists of 7 statements regarding the abilities of teachers in using technology. Lastly, part four consists of 8 statements regarding the integration of technology in education. The instrument was adapted and modified from the original questionnaire developed by Yang and Hong (2022) to be suitable for this research.

Pilot Testing and Instrument Refinement

To ensure the survey instrument effectively captured the perspectives of early childhood educators in Punjab, Pakistan, a pilot test was conducted. This involved a sample of 40 teachers (20 male and 20 female) from both public and private schools. Their valuable feedback informed refinements to the questionnaire, particularly with regard to question clarity and content relevance. This pilot testing process played a key role in strengthening the instrument's content validity and internal consistency (the consistency of responses within each section of the survey). As a result, the groundwork was laid for a more reliable and valid data collection phase in the main study.

Ethical Considerations

In this research, ethical considerations for early childhood teachers were prioritized. Informed consent was obtained from all participating teachers, ensuring they fully understood the research goals, procedures, and potential implications. Confidentiality of teacher responses and data was maintained throughout the study. Participation was voluntary, and teachers could withdraw at any point without penalty. The research design minimized any potential burden on teachers' time or workload. These ethical measures aimed to foster trust and protect the rights and well-being of teacher participants.

Data Analysis

The data was analyzed using the Statistical Package for Social Sciences (SPSS). In this study, the researcher conducted an analysis utilizing the mean and independent sample t-test. The research findings were shown in tabular format.

Results and Discussion

Diversified Technology Usage in Early Childhood Education

This research investigated technology integration in Early Childhood Education (ECE) programs across public and private schools in District Shorkot, Pakistan. The study aimed to understand the current state of technology use within these sectors and identify any potential disparities. This research investigated technology integration in Early Childhood Education (ECE) programs across public and private schools in District Shorkot, Pakistan. The findings, presented in Tables 1 and 2 reveal a significant disparity in how these sectors utilize technology.

Standardized Scores and Overall Averages

The initial analysis examined the average scores for various factors related to technology use in both public and private schools. Table 1 presents these findings for both sectors.

Table 1
Means and Standard Deviations of Technology Factors

Factors	Public Schools (M ± SD)	Private Schools (M ± SD)
Effective Use of Technology	22.48 (3.89)	30.11 (3.87)
Available Technology Facilities	20.34 (2.70)	31.25 (3.51)
Teachers' Use of Technology Skills	21.56 (2.56)	30.54 (3.25)
Integration of Technology in Teaching	21.35 (2.97)	32.55 (3.11)
Total	85.73 (12.12)	94.45 (13.74)

Table 1 reveals that private schools achieved consistently higher average scores across all factors, ranging from 30.11 (effective use) to 32.55 (integration in teaching), compared to public schools' scores ranging from 20.34 (available facilities) to 22.48 (effective use). The overall average score for public schools sits at 85.73, while private schools score an average of 94.45.

A clear disparity emerges from these initial observations, suggesting a potential gap in technology integration between public and private ECE settings in the researched district.

- **Public Schools:** The average scores for all factors related to technology use fall within the range of 20.34 (available facilities) to 22.48 (effective use). The overall average for public schools sits at 22.98.

- **Private Schools:** Private schools demonstrate consistently higher averages across all factors, ranging from 30.11 (effective use) to 32.55 (integration in teaching). These translate to a considerably higher overall average of 32.14 for private schools.

These initial observations highlight a clear gap in technology integration between public and private ECE settings in the researched district.

Table 2
Public vs. Private Sector Comparison: A Deeper Look

Subscales of Technology	Public (M ± SD)	Private (M ± SD)	t	Sig. (df = 158)
Effective Use of Technology	22.12 ± 4.169	30.11 ± 4.139	9.207	.020

Available Technology Facilities	21.48 ± 4.867	28.09 ± 4.675	8.756	.016
Teachers' Technology Skills	22.22 ± 5.208	29.31 ± 5.658	8.245	.021
Integration of Technology in Teaching	33.72 ± 7.594	45.77 ± 6.098	11.075	.034

Table 2 delves deeper, showcasing statistically significant differences between the two sectors using t-tests. Here's a breakdown of the key findings:

- **Effective Use of Technology:** Public schools scored an average of 22.12 compared to private schools' 30.11, with a significant difference ($t = 9.207$, $p = .020$).
- **Available Technology Facilities:** Similar to effective use, public schools (21.48) lagged behind private schools (28.09) in accessing technology resources, with a significant difference ($t = 8.756$, $p = .016$).
- **Teacher Technology Skills:** Public school teachers exhibited lower average scores (22.22) compared to private school teachers (29.31) in their technology skills. This difference was also statistically significant ($t = 8.245$, $p = .021$).
- **Integration of Technology in Teaching:** The most significant disparity ($t = 11.075$, $p = .034$) lies in integrating technology into teaching practices. Public schools averaged 33.72, while private schools reached a much higher average of 45.77.

1. **Interpretation and Implications:**

To bridge the technology gap and ensure equitable access for all young learners, several key areas require targeted interventions:

- **Increased Investment in Technology Resources:** Public schools need additional funding to acquire and maintain up-to-date technology equipment and software.
- **Comprehensive Teacher Training Programs:** Equipping public school teachers with the necessary skills and knowledge to confidently integrate technology into their teaching approaches is crucial. Training programs should address not only technical skills but also pedagogical approaches for effectively utilizing technology within the curriculum framework.
- **Curriculum Development:** Aligning curriculum objectives with technology integration can support teachers in utilizing technology effectively for learning activities. This may involve incorporating technology tools and resources into lesson plans and developing activities that leverage the unique capabilities of technology to enhance learning outcomes.

By addressing these issues, we can ensure that all young learners, regardless of their school sector, benefit from the potential advantages of technology in early childhood education.

Discussion

The exploration of technology integration in early childhood education (ECE) reveals a multifaceted landscape. While the potential benefits of technology-enhanced learning are undeniable, the findings illuminate a concerning disparity between public and private educational institutions. This discussion delves into the key results, highlighting the digital divide that hinders equitable access to technology in ECE settings. The research underscores a stark difference in the availability of technology resources and the opportunities for technology integration within public and private schools. Public schools often lack the necessary infrastructure, including a sufficient number of devices like

desktops, laptops, tablets, and multimedia equipment (Vidal-Hall et al., 2020). Additionally, public schools typically have fewer technology facilities compared to their private counterparts (Koç, 2014). This disparity translates to a lack of access for students in public schools, potentially hindering their exposure to technology-driven learning experiences.

The Importance of Teacher Expertise

Beyond the limitations in resources, the research highlights a critical role for teacher expertise. Private schools tend to have teachers with a greater grasp of technology and its integration into their pedagogy (Vidal-Hall et al., 2020). This is likely due to the increased availability of professional development opportunities in private schools that equip educators with the necessary skills to effectively utilize technology in the classroom (Undheim, 2022). Conversely, teachers in public schools may lack these professional development opportunities, leading to a gap in their technological skillset and confidence in using technology for instruction (Greenleaf, 1994).

Motivation and Enthusiasm

The research sheds light on the significance of teacher motivation and enthusiasm for integrating technology. Studies reveal that private school educators generally hold a more positive attitude towards technology and its potential benefits for student learning (Zaki, 2013). This positive sentiment could be influenced by factors like smaller class sizes and readily available technological resources in private schools. On the other hand, public school teachers might experience lower levels of enthusiasm due to the challenges associated with technology integration, such as limited infrastructure and larger class sizes. The digital divide has potential consequences for student learning outcomes. When students in public schools have limited access to technology and technology-integrated instruction, there's a risk of them falling behind their counterparts in private schools who benefit from a richer technological learning environment (Koç, 2014). Research suggests that technology, when used effectively, can enhance student engagement, foster higher-order thinking skills, and promote problem-solving abilities (Yang & Hong, 2022). However, these potential benefits remain elusive for students in public schools with limited technological opportunities.

Bridging the Divide

Increased Public Investment: Increased funding for technology infrastructure in public schools is crucial. This includes acquiring a sufficient number of devices and investing in high-speed internet access to facilitate technology-based learning activities (Gray et al., 2010). Providing public school teachers with professional development opportunities focused on technology integration is essential. These programs should equip teachers with the necessary pedagogical skills and confidence to utilize technology effectively in their classrooms (Undheim, 2022). Efforts to address teacher motivation and enthusiasm for technology integration are also crucial.

This could involve creating supportive environments where educators feel comfortable experimenting with technology and receive support from peers and administrators (Greenleaf, 1994). Technology integration initiatives should be designed with equity in mind. This might include providing additional resources and support to schools with a higher proportion of students from low-income backgrounds to ensure they are not further disadvantaged by the digital divide (Voogt & McKenney, 2017).

A Call for Action

The digital divide in ECE poses a significant barrier to equitable access to technology-enhanced learning experiences. By acknowledging this divide and

implementing the strategies outlined above, we can work towards creating a future where all children, regardless of their socioeconomic background, have the opportunity to thrive in a technology-rich learning environment. This requires a collaborative effort between educators, policymakers, technology companies, and parents to ensure a future where technology becomes a tool for educational equity and inclusion in early childhood education.

Conclusion

The research examines how teachers perceive, access, and use technology based on the fundamental ideas of Rogers' Diffusion of Innovation and Davis' Technology Acceptance Model (TAM). By using a quantitative research approach and administering Likert scale questionnaires to a group of 250 teachers, this study reveals notable discrepancies in the incorporation of technology between public and private educational establishments. The data indicates that private schools have superior technology resources, employ staff with more expertise in technology, and have a more favorable attitude towards using technology in teaching procedures. On the other hand, public schools have several difficulties, such as a lack of appropriate technology resources, poor teacher training in technology, and a general reluctance to embrace technology in teaching techniques. The study concludes by proposing recommendations to improve the integration of technology in all areas. It highlights the importance of government intervention in providing technology resources, revising curricula to incorporate technology competency, and implementing comprehensive teacher training programs to equip teachers with the necessary technology skills. This detailed assessment not only emphasizes the present condition of technology in early childhood education in Pakistan but also suggests practical approaches for using technology to enhance educational results.

Recommendations

The government may play a crucial role in assisting in the supply of essential technological resources in order to successfully incorporate technology into ECE schools, particularly those managed by the government. This endeavor would not only facilitate the establishment of the necessary infrastructure for the integration of technology but also contribute to fostering a favorable view among teachers about the advantages of technology in education. Teacher training institutes must aggressively encourage the effective use of technology. By doing this, they may provide teachers with the necessary skills to improve accessibility, learning, and organization in the educational setting. In addition, the government should prioritize improving educational programs that provide technical training. It is essential to ensure that instructors get sufficient education in the use of technological resources during their teaching process at this level of education. This complete strategy would not only cultivate a favorable learning environment but also equip pupils to excel in a digitally complicated world.

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