## TECHNOLOGY INNOVATION IN EARLY CHILDHOOD

**Xiu Si**
Al-Farabi Kazakh National University, PhD student
E-mail: awsperfect@gmail.com

**Abstract:** The integration of digital and innovative technologies into preschool education systems is becoming increasingly prevalent. This paper explores the current issues surrounding the introduction of these technologies, focusing on their potential benefits and challenges. The study highlights the importance of ensuring that technology is used effectively and responsibly in order

to enhance learning outcomes for young children. The paper concludes by discussing the need for ongoing research and professional development in order to fully harness the potential of digital technologies in early childhood education.
**Keywords:** preschool education, digital and innovative technologies, learning experiences, professional development.

In recent years, the integration of digital and innovative technologies into preschool education has garnered significant attention from educators, policymakers, and researchers. This trend is driven by the recognition that technology can enhance learning experiences, promote inclusivity, and facilitate the development of essential skills for future success. However, the implementation of these technologies also presents several challenges and concerns. This paper explores current issues in introducing digital and innovative technologies in the preschool education system, drawing upon a range of scholarly sources to provide a comprehensive analysis.

According to the National Association for the Education of Young Children (NAEYC), "Technology can be a powerful tool for enhancing learning experiences in early childhood education" (Johnson et al., 2019). This sentiment is echoed by Jenkins (2017), who notes that technology can provide "engaging and interactive learning opportunities" that are tailored to individual children's needs and interests. For example, educational apps and online games can be used to teach basic skills such as reading, math, and science in a fun and engaging way.

However, a key challenge in introducing digital and innovative technologies in preschool education is ensuring inclusivity and accessibility for all children (Kuo & Wang, 2018). The digital divide - the unequal distribution of access to technology - is a significant concern in the context of preschool education (Henson et al., 2018). This includes children with disabilities, who may require specialized hardware or software to access educational materials; children from low-income families may lack access to devices, high-speed internet, or even basic technological skills. Additionally, it is important to consider the diverse cultural and linguistic backgrounds of preschoolers, as technology can be used to support multilingual learning (Alon et al., 2019).

Another challenge is ensuring that they are not a replacement for traditional methods but rather a supplement to them. The integration should not be a one-size-fits-all approach but rather a tailored experience that caters to the individual needs and abilities of each child. This requires a comprehensive understanding of the children's development stages and how digital tools can be used to support their learning process. In addition, the use of technology in the classroom can have both positive and negative impacts on teacher-child relationships (Kuo & Wang, 2018). On the one hand, technology can provide opportunities for increased interaction and engagement between teachers and children. On the other hand, it can also lead to decreased face-to-face interaction and reduced opportunities for emotional support and social development. Therefore, the role of the teacher becomes even more crucial in this context, as they need to be trained to use these technologies effectively and ensure that they are not becoming a barrier to the children's learning.

Moreover, there is a concern about the potential negative impact of screen time on children's physical and mental health. It is essential to ensure that the use of digital technologies is balanced with physical activities and that children are not exposed to excessive amounts of screen time. Research has shown that too much screen time can lead to obesity, eye strain, and disruptions in sleep patterns. It is also important to consider the potential impact on children's social skills and emotional development, as they may become more isolated and dependent on technology for their interactions. As more and more preschoolers are using digital devices and accessing online resources, cybersecurity and privacy concerns become increasingly important (Alon et al., 2019). Preschool educators should be aware of the potential risks associated with technology use, such as exposure to inappropriate content or cyberbullying, and take steps to mitigate these risks (Jenkins, 2017). Therefore, it is crucial to establish guidelines for the appropriate use of digital technologies in preschool education, taking into account the age and developmental stage of the children.

Based on the current issues, professional development and training are essential. Teachers and educators must be equipped with the knowledge and skills to effectively integrate technology

into their teaching practices (Looi et al., 2019). This includes training in how to use various educational technologies, as well as how to design and implement technology-based learning activities that are aligned with early childhood development goals. Professional development programs can also help educators stay informed about the latest research and best practices in the field (Dede & Chang, 2016). In addition, it is also important to ensure that there are proper guidelines and regulations in place to protect student privacy and safety when using these technologies.

Collaboration between educators, parents, and technology companies is also necessary for the successful implementation of digital and innovative technologies in preschool education (Johnson et al., 2019). This collaboration can help ensure that technology is used in a way that supports children's learning and development, while also addressing concerns about privacy and security. Additionally, partnerships with technology companies can help provide access to resources and support for educators (Looi et al., 2019).

Furthermore, policymakers play a crucial role in supporting the integration of digital and innovative technologies in preschool education (Dede & Chang, 2016). This includes providing funding for technology infrastructure, supporting professional development programs for educators, and establishing guidelines for the use of technology in early childhood settings. Additionally, policymakers can help address concerns about privacy and security by establishing clear regulations and guidelines for technology use in preschool education (Alon et al., 2019).

As technology continues to evolve, it is likely that its role in preschool education will continue to grow (Jenkins, 2017). However, it is important to approach this growth with caution, ensuring that technology is used in a way that supports children's learning and development while also addressing concerns about privacy, security, and inclusion. Research is essential for understanding the impact of digital and innovative technologies on preschool education (Henson et al., 2018). This includes studying the effectiveness of various technologies in supporting children's learning and development, as well as assessing the potential risks and challenges associated with their use. Additionally, regular evaluation of technology implementation can help identify areas for improvement and inform future policy decisions (Johnson et al., 2019). By working together as educators, parents, and policymakers, we can ensure that technology is a powerful tool for enhancing the early childhood education experience for all children.

In conclusion, the introduction of digital and innovative technologies in preschool education presents both opportunities and challenges. While technology can enhance learning experiences and promote inclusivity, it is important to consider the potential risks and concerns associated with its use. By addressing these issues through professional development, collaboration, policy support, and ongoing research, we can ensure that technology is used in a way that supports children's development and leads to positive outcomes.

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