The Utilization of Digital Technology in Early Childhood Education Learning

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Abstract

This research aims to examine how digital technology benefits early childhood education in learning. Early childhood learning in the digital era presents great opportunities to improve the quality of education through technology. Technology in early childhood education has evolved along with the times. In the past, only television was used to support learning, then it developed into computers, and now many smart technologies such as mobile phones, tablets, and other applications are widely used. Technologies such as educational applications, learning videos, and online platforms enable more flexible, interactive, and individualized learning. In early childhood education, technology can serve as a tool to facilitate learning. In line with its development, technology plays a significant role in guiding early childhood development. It can be used by children for playing, self-expression, and skill development in a safe, engaging, and enjoyable way. With the right approach, technology can become a relevant learning medium that continues to evolve over time.

Keywords: *Early Childhood, Technology, Digital Era*

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Introduction

Education plays a crucial role in achieving national development. Through education, individuals who are capable of contributing to the country with their potential and talents will emerge. In order to produce individuals who can contribute to national development, the educational process must receive serious attention. The importance of the early years of a person's life has been widely recognized, as it is during this period that the brain develops most rapidly. In fact, reliable research has shown that brain development can reach more than 50% during this stage. Early childhood is a fundamental phase of individual development, often referred to as the *golden age* (Asti & Syamsuardi, 2021).

Education for early childhood is based on the principle that children are not miniature adults. They are individuals who possess their own world, which is different from that of adults. Every child has multiple forms of intelligence, all of which must be given equal opportunities to develop optimally (Natawidjaja et al., 2007). One way to achieve developmental milestones in children is through learning with technology, since in today's digital era, technology has become an inseparable part of daily life, including in the field of education (Romba, 2024).

Children grow up in an environment rich in technology, which influences the way they learn and interact with information. Learning in early childhood will be more effective when children are engaged through visual or audiovisual media. At this stage of development, young children tend to absorb information more easily by seeing and hearing. By using digital learning media, early childhood learners are more likely to show interest and attention toward the learning material, enabling them to absorb information more effectively.

Literature Review
Early Childhood

Early childhood is often referred to as the golden age. At this stage, a child's development is most closely observed. Learning media play an important role in enhancing the effectiveness of the learning process by facilitating the delivery of messages and content. In improving the quality of early childhood education, educators play a crucial role in determining how much benefit learners can gain from the use of technology, and it is essential for them to understand children's perspectives. However, the introduction of technology to early childhood has sparked both support and concerns. Initially, there were worries that the use of technology would lead to poor social skills, fewer effective learning opportunities, and less age-appropriate play. Yet, over time, it has been shown that technology, when managed appropriately, can actually facilitate social and cognitive development and even enhance play activities among young children (Wood et al., 2008).

In addition, there are also challenges faced in the process of digital learning, such as skill-related issues like the lack of teacher training and limited knowledge, as well as attitude-related problems such as teacher anxiety and concerns about changes in the social structure of the classroom environment. The use of technology, however, can assist teachers in providing open access to information that allows children to explore meaningful learning topics. This is possible because children can directly interact with the various technologies being used.

In addition to its role in daily life, technology is also widely used to support the learning process, including in early childhood education. Technology can be utilized as a medium to introduce number concepts and reasoning to children. Both teachers and parents in early childhood learning today often apply technology-based methods, such as using YouTube to watch educational videos, sing songs, read, recite, and practice counting.

Types and Models of Technology-Based Learning Used in Early Childhood Education

The learning process supported by technology allows students to acquire knowledge through various media, such as images, audio, video, and interactive simulations. This provides educators with the opportunity to deliver learning materials in a more engaging way that aligns

with students' individual learning preferences. In addition, interactive technology creates two-way communication, encourages collaboration among students, and enhances student engagement in the learning process (Sulaeman, 2022).

In the context of early childhood education, technology-based innovative learning has become a key factor in preparing the young generation to face the challenges of an increasingly digitally connected world. Therefore, a deep understanding of this concept is essential to ensure its implementation brings a positive impact on the learning process of children at this level (Rahman, 2021).

Some examples of digital-based learning media that are often applied at the early childhood education (ECE) level, according to Lutfi (2023) :

1. Educational Applications: Educational programs specifically designed to provide interactive and engaging learning experiences.
2. Learning Videos: Digital learning videos allow educators to deliver teaching materials through visual and audio media.
3. E-Books and Digital Materials: Digital books (e-books) and digital resources offer a technological alternative to conventional printed books.
4. Simulations and Educational Games: Simulations and educational games are designed to enable students to learn through practical experiences.
5. Online Learning Platforms: Online platforms provide virtual learning spaces where teachers and students can interact, access learning materials, and participate in activities.
6. Collaborative Learning: Some platforms even offer tools to monitor students' progress and facilitate online discussions.

Research Methodology

The method used in this study is the observation method. The observation method is designed to explain the steps taken in data collection, information analysis, and the presentation of ideas that form the basis of this work. The main objective of this research is to examine the benefits of using digital technology in learning, as demonstrated through the use of technological media, including an actual laptop and a computer made from recycled materials.

Results

Based on the results of the data analysis, it was found that the use of digital technology in early childhood learning is highly needed to stimulate learning development and to spark children's interest in enjoyable learning. Education is the most important investment for every nation, especially for developing countries. In early childhood education, it is crucial and serves as a valuable investment for the child's future. By providing positive learning experiences, early childhood education helps children grow into intelligent, creative individuals with good character, who are well-prepared to face future challenges.

Technology in learning is understood as educational technology, namely tools or supporting media used in teaching and learning activities such as computers, projectors, televisions, video recorders, and others. The utilization of technology in learning involves the development, application, and evaluation of systems, techniques, and tools aimed at improving and enhancing the learning process for children. Technology in learning encompasses various aspects that support the overall educational process.

The benefits of using information and communication technology for children include:

1. Children are actively engaged in learning activities when using digital technology.
2. It allows teachers to control the pace and sequence of learning and provides greater control over learning outcomes.
3. Educators can design learning experiences according to children's characteristics and monitor their progress.

4. Information management enables handling all types of information, including audio and video, which can be easily accessed by educators and children to track the child's learning progress.
5. It provides diverse learning experiences.

Conclusion

The integration of technology-based learning media encompasses a variety of tools and applications designed to support and enhance the effectiveness of early childhood education, while simultaneously fostering children's interest in enjoyable learning. Digital technology serves as a key driver in creating more interactive and engaging learning experiences. Through the use of educational applications, instructional videos, and online platforms, learning becomes more flexible and accessible anytime and anywhere, thereby accommodating the diverse learning styles of young children.

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