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The Impact of Digital Technology on Children's Concentration

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Abstract. *Digital technology significantly impacts children's concentration. While educational apps and structured media positively influence cognitive development, learning motivation, memory, and problem-solving skills, excessive, uncontrolled use leads to negative effects. These include decreased concentration, language development issues, and dependence on devices, hindering creativity and independence. Rapid, responsive technological interactions accustom children to instant stimuli, making sustained attention difficult. Intense screen exposure can cause impulsivity, distractibility, and reduced focus. Therefore, adaptive and technology-aware parenting is crucial. Parental supervision, balanced integration, and time limits on device usage are essential to maximize benefits and minimize adverse effects on children's concentration and overall development*

Keywords: *Child concentration, Cognitive development, Digital technology, Parenting style, Screen time*

1. INTRODUCTION

The development of digital technology in the last decade has changed the way today's children grow up in an environment saturated with digital devices such as smartphones, tablets, computers, and smart TVs. Data from Common Sense Media (2020) shows that children aged 8–12 years spend an average of almost five hours a day using digital media. Although digital technology provides benefits such as access to information and educational tools, several studies indicate that excessive use can impair children's cognitive function, including their ability to concentrate (Anderson & Subrahmanyam, 2017). Fast-paced and interactive technology can make it difficult for children to maintain attention in non-digital activities such as reading, writing, or listening to teachers in class (Christakis, 2009; Swing et al., 2010). Several studies have shown that intense screen exposure, particularly for entertainment such as games or short videos, can cause children to become more impulsive, easily distracted, and reduce their ability to complete tasks with full focus (Loh & Kanai, 2016; Lillard et al., 2015). Furthermore, frequent digital multitasking can affect children's selective attention and working memory (Ophir et al., 2009). Concentration is a crucial component of a child's executive function development, which influences learning and academic achievement (Diamond, 2013). Therefore, it is important to further examine the impact of digital technology use on children's concentration, taking into account the perceptions of various stakeholders, including parents, teachers, and the children themselves.

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2. RESEARCH METHODS

This research employed a qualitative literature review method. Data were collected from secondary sources such as journals, scientific articles, and published, openly accessible research reports. This method did not involve direct observation or interviews, but rather analyzed existing findings and theories to understand the impact of digital technology on children's concentration skills.

The analysis was conducted thematically to identify the positive and negative influences of digital technology on children's concentration, as well as the factors influencing these relationships. This approach effectively provided a comprehensive picture without the bias of primary data collection.

3. RESEARCH RESULT

Digital Technology Use Among Children

The use of digital technology among children has become an unavoidable global phenomenon, permeating almost every aspect of their lives, from education and entertainment to social interactions (Chauhan, 2024). This digital era offers a variety of platforms and applications specifically designed to engage children, such as interactive educational games, video streaming, and social media. The high level of accessibility to digital devices such as smartphones, tablets, and personal computers has fundamentally changed the landscape of child development, providing opportunities for extensive information exploration and personalized learning experiences (Gupta, R., & Sharma, A. (2023). However, this widespread use of digital technology has also raised various questions and concerns regarding its potential positive and negative impacts on children's cognitive, social, emotional, and physical development (Haryanti, P., & Lestari, Y. D (2022). Therefore, according to Jones, S. M., & Johnson, A. M (2021), it is important to understand how this technology is integrated into children's daily lives and its implications for various aspects of their development.

Digital technology usage patterns among children vary greatly depending on age, social environment, and parental supervision (Kim, J., & Lee, S. (2020). Early childhood is often exposed to educational videos or simple games, while elementary school-aged children begin to engage with social media platforms, multiplayer online games, and use the internet for schoolwork (Li, X., & Chen, Y. (2023). The intensity and duration of digital device use are also crucial factors determining the impact (Zidniyati, Z. (2019). According to Mauryn, F. A., & Ratnaningrum, I (2024), the use of technology in the form of gadgets can influence a person's behavior and personality. It appears that society's tendency to be indifferent has changed.

Several studies show that excessive digital technology use can disrupt concentration, reduce outdoor playtime, and affect children's sleep quality (Pryanti, R., & Santoso, B. (2023).

On the other hand, when used wisely and with proper guidance, digital technology can be a powerful tool to enhance creativity, problem-solving skills, and access to limitless knowledge, preparing them for the challenges of an increasingly digital future Wang, L., & Zhang, Y (2022). The role of digital technology in enhancing problem-solving skills and creativity in children is also clearly visible through various interactive platforms and educational applications.

Children's Concentration Skills

Children's concentration skills are a crucial aspect of their learning process and cognitive development. Concentration can be defined as the ability to focus attention and thoughts on a specific object or activity, while ignoring other irrelevant stimuli.

According to Sati & Sunarti (2021), "Learning concentration is a person's ability to focus their thoughts and attention during learning activities. This focus is focused on the content and learning materials, or the stages of learning." This statement aligns with Supriyo's (2008:103) view, which states, "Concentration is the focus of thought and attention on one thing while ignoring all distractions." Thus, concentration enables children to complete tasks more effectively and achieve optimal results. Furthermore, Chyquitita et al. (2018) suggest that indicators of learning concentration in children encompass two main aspects: the cognitive aspect, which encompasses the ability to understand material, knowledge readiness, and application of knowledge; and the affective aspect, which relates to the acceptance of material, attention to information sources, and active participation in asking questions and arguing. Robert Dilts and Jennifer Dilts (2004:15) assert that "Concentration is a skill that can be taught by parents and teachers. Concentration can be learned or practiced so that children can complete work or activities accurately and with good results." This statement emphasizes that concentration is not simply an innate talent, but rather a skill that can be honed through practice and habituation.

Furthermore, according to Salman Rusydie (2012:96), various factors can influence a child's concentration, including fatigue, hunger, the desire to do something, the study load, the influence of technology such as gadgets and video games, and a noisy environment. Therefore, it is important to pay attention to these factors so that children can concentrate optimally. Pratiwi et al. (2016) also state that "A person who can learn well is one who can concentrate well; in other words, they must have the habit of focusing their thoughts." In other words, a

lack of concentration will negatively impact a child's learning outcomes and the effectiveness of their activities.

In the context of cognitive development, Jean Piaget (in Istiqomah & Maemonah, 2021) emphasized that concentration skills are closely related to the developmental stages of early childhood. In the preoperational stage, children begin to focus on one aspect of an object or event, although they are still easily distracted. To improve children's concentration, Salman Rusydie (2012:35) stated that, "Improving children's concentration is not an easy task. It requires practice, habituation, and the right strategies to get children used to focusing." One method proven effective is storytelling, as evidenced by Manurung & Simatupang (2019), who wrote, "Storytelling can improve the concentration of 5-6-year-old children at Santa Theresia Kindergarten in Binjai."

Research by Khotimah, Sunaryati, & Suhartini (2020) shows that "The application of visual media as an effort to improve concentration in early childhood learning can improve children's focus and attention during the learning process." Furthermore, Novianti, Marega, & Wahyuni (2022) found that educational games also play a crucial role in training and improving children's concentration. Martadi (in Salman Rusydie, 2012:35) highlighted the close relationship between concentration and memory: "Children with weak memories and difficulty concentrating tend to be forgetful and often worry their parents. This trait is an indicator of a child's low intelligence."

Finally, Purba (2019) emphasized that "Learning occurs throughout life, anytime, anywhere, and at any time without a predetermined time. Concentration is one aspect that supports students' achievement."

The Impact of Digital Technology on Concentration in Early Childhood

The use of digital technology in early childhood (4-6 years old) has various impacts on their ability to concentrate. On the one hand, educational applications and structured digital media can improve children's learning motivation and cognitive abilities, such as memory and problem-solving. As stated by (Rideout & Kiran, 2021), "The wise and structured use of technology at an early age can have a positive impact on children's cognitive development." Similarly, Feri (Faila, 2020) also stated that "Computer learning can effectively develop cognitive abilities in early childhood." In fact, according to (Journal Influence of Digital Technology, 2025), "Children who actively use digital technology have higher learning motivation and better academic achievement."

However, on the other hand, excessive and uncontrolled use of technology can lead to decreased concentration, impaired language development, and dependence on digital devices that hinder children's creativity and independence. "Children who use digital devices excessively tend to have difficulty focusing for long periods of time," according to the results of "Research on the Impact of Digital Applications" (2025). This is because interacting with fast and responsive technology can make children accustomed to instant stimulation, making it difficult to maintain attention on tasks that require longer concentration. "Interaction with fast and responsive technology can affect children's emotional regulation," as stated in the "Journal of the Impact of Technology Use" (2020). Furthermore, "Research on Digital Applications" (2025) also warns that "Dependence on technology can hinder children's creativity and independence."[7] Furthermore, the lack of direct social interaction due to technology use can also reduce children's emotional regulation and communication skills. "The use of audio-visual media enhances children's learning experiences, but supervision is necessary to prevent addiction," added Pangestika (2017).

Parental supervision and balanced technology integration are crucial to maximize the positive impact of technology without negatively affecting children's concentration. Handrianto Ekry Binti Farizal emphasized, "Using gadgets under parental supervision can improve children's learning outcomes." Limiting gadget use, for example, to two hours a day divided into short sessions, can help prevent addiction and maintain children's ability to focus. "Limiting gadget use to two hours a day can prevent addiction in children," suggests a psychology expert. In conclusion, as stated in the 2022 issue of "Color Journal," "Technology use must be structured, directed, and balanced to support children's development."

The Role of Parenting Style in Addressing the Impact of Digital Technology on Children's Concentration

The use of digital technology among children has increased significantly in the last decade. Easy access to devices such as smartphones, tablets, and televisions has had a positive impact on interactive learning, but has also raised concerns about children's concentration skills. One important aspect to consider in addressing this phenomenon is the parenting style applied by parents in their children's daily lives.

Parenting style refers to the approach parents use to educate, guide, and manage their children. Diana Baumrind (1966) classified parenting styles into four main types: authoritative (democratic), authoritarian (authoritarian), permissive (indulgent), and neglectful (neglectful). Each style has a different influence on children's behavior, emotions, and cognitive development, including their ability to concentrate amidst the rapid flow of digitalization.

The authoritative parenting style is considered the most effective approach in this context. Parents with this style are warm but firm, set clear limits on technology use, and openly engage in dialogue with their children. Children raised democratically tend to have good self-discipline, can manage their time between study and play, and have more stable concentration skills. Conversely, a rigid and pressurizing authoritarian style tends to make children obey out of fear, not awareness, leading them to use devices secretly and for uncontrolled periods.

A permissive style that is too liberal, and a neglectful style that tends to neglect supervision, can exacerbate the negative impact of technology on concentration. Children raised in this style are more susceptible to attention deficit disorder and difficulty focusing due to the lack of limits or guidance when using digital devices. This aligns with the findings of various studies showing that excessive and uncontrolled screen time can reduce attention span and slow children's cognitive responses.

Therefore, in facing the challenges of digital technology, parents need to implement adaptive and technology-aware parenting strategies. These strategies can include creating a schedule for gadget use, modeling healthy use, engaging children in non-digital activities, and implementing mindful parenting techniques, a parenting style that emphasizes full emotional and mental presence when interacting with children.

Therefore, parenting style is a key factor in addressing the negative impacts of digital technology on children. A wise, attentive parenting style based on two-way communication can create a healthy environment for children's cognitive development, particularly in the area of concentration, which is crucial for their learning and growth.

4. DISCUSSION

The Positive Impact of Digital Technology on Children's Concentration

The use of digital technology in early childhood has the potential to have a significant positive impact on their cognitive development and concentration. Educational applications and structured digital media can be effective tools for increasing children's motivation to learn and developing cognitive skills such as memory and problem-solving. One study even suggests that the wise and structured use of technology at an early age can have a positive impact on children's cognitive development. Computer-based learning has also been shown to effectively develop cognitive abilities in early childhood.

Furthermore, children who actively use digital technology tend to have higher learning motivation and better academic achievement. Digital technology also plays a role in enhancing children's problem-solving skills and creativity through various interactive platforms and

educational applications. When used wisely and with proper guidance, digital technology can be a powerful tool for enhancing creativity, problem-solving skills, and access to unlimited knowledge, preparing them for the challenges of an increasingly digital future. Furthermore, the use of audio-visual media can enhance children's learning experiences, although supervision is necessary to prevent addiction.

With proper parental supervision, gadget use can even improve children's learning outcomes. This shows that digital technology, when integrated in a balanced and structured way, can be a valuable asset in supporting children's cognitive development and concentration, providing them with a strong foundation for learning and growth in the digital age.

The Negative Impact of Digital Technology on Children's Concentration

Despite its benefits, excessive and uncontrolled use of digital technology can have serious negative impacts on the concentration of young children. Uncontrolled technology use can lead to decreased concentration, impaired language development, and a dependency on digital devices that hinders children's creativity and independence. Rapid and responsive interaction with technology can make children accustomed to instant stimulation, which in turn makes it difficult for them to maintain attention on tasks that require longer concentration. Several studies also suggest that intense screen exposure, especially for entertainment such as games or short videos, can cause children to become more impulsive, easily distracted, and reduce their ability to complete tasks with full focus.

Furthermore, the lack of direct social interaction due to technology use can reduce children's emotional regulation and communication skills. Frequent digital multitasking can also affect children's selective attention processes and working memory. Excessive use can impair children's cognitive functions, including their ability to concentrate.

Excessive use of technology in the form of gadgets can also affect a person's behavior and personality, even leading to a tendency towards indifference. Several studies have shown that excessive use of digital technology can disrupt concentration, reduce outdoor playtime, and affect children's sleep quality. Therefore, it is important to understand how this technology is integrated into children's daily lives and its implications for various aspects of their development.

5. CONCLUSION

The use of digital technology in early childhood has a complex impact on their concentration skills. On the one hand, digital technology can play a positive role in supporting children's cognitive development and concentration. Structured educational applications can

increase learning motivation, memory, and problem-solving skills in children. Wise and structured use of technology at an early age has been shown to have a positive impact on children's cognitive development, and computer-based learning can even effectively develop cognitive abilities in early childhood. Children who actively use digital technology also tend to have higher learning motivation and better academic performance.

However, on the other hand, excessive and uncontrolled use of digital technology has a significant negative impact on children's concentration. This can lead to decreased concentration, impaired language development, and dependence on digital devices that hinders children's creativity and independence. Rapid and responsive interaction with technology makes children accustomed to instant stimulation, making it difficult for them to maintain attention on tasks that require longer concentration. Several studies also show that intense screen exposure, especially for entertainment such as games or short videos, can cause children to become more impulsive, easily distracted, and reduce their ability to complete tasks with full focus.

Therefore, the role of parents in implementing an adaptive and technology-aware parenting style is crucial. Parental supervision and balanced technology integration are crucial to maximize positive impacts and minimize negative effects on children's concentration. Limiting gadget use time can help prevent addiction and maintain children's ability to focus. Therefore, technology use must be structured, directed, and balanced to support optimal child development. A wise, attentive parenting style based on two-way communication can create a healthy environment for children's cognitive development, especially in the aspect of concentration, which is crucial for their learning and growth.

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