

# Analysis of The Allocation of Time For The Use of Gadgets For The Cognitive Development Of Elementary School Children

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## Keywords

Gawai

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## Abstract

This study aims to analyze the relationship between the allocation of time for the use of gadgets and the cognitive development of elementary school-age children. Using a descriptive qualitative approach through the literature study method, data were obtained from various accredited national journals and relevant scientific articles. The results of the study show that the wise and limited use of gadgets can have a positive impact on children's cognitive aspects, such as improving memory, logical thinking skills, and understanding concepts through interactive media. On the other hand, excessive use without supervision risks causing concentration disorders, decreased problem-solving skills, and weak social interaction. This study recommends allocating time to use gadgets between 1-2 hours per day with parental or teacher assistance. The conclusion of this study emphasizes the importance of collaboration between parents and educators in managing the use of gadgets to support children's cognitive growth and development optimally.

## 1. Introduction

The development of digital technology has brought about major changes in human life, including in the way parents educate and nurture children. Gadgets have become an inseparable part of daily life, both as a means of communication, entertainment, and learning media. Along with the rapid pace of digital innovation, elementary school children are increasingly familiar with the use of gadgets, especially in supporting their learning process through technology-based educational applications and platforms.

The use of gadgets in children's education has various positive benefits. Children can access information extensively, improve cognitive skills, and develop their creativity and imagination. In addition, gadgets can help accelerate the understanding of difficult learning concepts with the help of interactive visualizations and educational simulations. However, uncontrolled and excessive use of gadgets can also have a bad impact on children's development. One of the aspects most vulnerable to its impact is cognitive development. A number of studies have revealed that children who often use unsupervised gadgets tend to experience decreased concentration, weakened memory, and difficulties in problem-solving skills. Uncontrolled use of gadgets can lead to addiction, decrease direct social interaction, and inhibit brain stimulation that should be obtained through concrete experiences. In addition, the duration of use of the gadget is also an important factor. Children who spend more than two hours a day using unsupervised gadgets generally experience cognitive development that is not optimal.

Seeing this phenomenon, it is important to analyze how the pattern of gadget use among elementary school children, especially related to the allocation of time used. By knowing the ideal time limit and healthy usage patterns, it is hoped that it can maximize the benefits of the gadget while minimizing its negative impact.

Therefore, it is very important for parents and educators to implement effective strategies in regulating the use of gadgets in children. Parents should set balanced time limits, ensure that the content accessed by children is appropriate for their age and needs, and encourage children's involvement in positive digital-youth activities, such as playing outside, reading and interacting directly with the social environment. In addition, educators also play a role in integrating technology wisely in the learning process, so that children can make optimal use of technology without sacrificing their social and emotional development.

With a balanced approach and proper supervision, gadgets can be a tool that supports children's education effectively without hindering their cognitive development or well-being. Therefore,

cooperation between parents and educators in managing the use of gadgets is very important to optimize the benefits of technological advances in the field of education.

## 2. Method

This study uses a descriptive qualitative approach with a literature study method. This approach was chosen to gain a deep understanding of the relationship between the allocation of time to use gadgets and the cognitive development of elementary school-age children. Literature studies are carried out by examining various scientific sources, such as accredited national journals, research articles, research reports, and other documents relevant to the topic, namely Analysis of Time Allocation of Gadget Use for Elementary School Children's Cognitive Development.

Data analysis is carried out by identifying important themes from previous research results, then synthesizing to find patterns, trends, and recommendations regarding the ideal device usage time limit. With this method, it is hoped that a comprehensive picture will be obtained regarding the influence of the duration of device use on the cognitive aspects of elementary school children, as well as a guide for parents and educators in managing the time of using technology in children.

## 3. Results and Discussion

**Table 1. List of Literature Summaries**

Yes	Writer	Research Title	Year	Research Results
1.	Chasanah, I., Ratna Utami Nur Ajizah, & Irfan Jauhari.	Parenting Discipline of Gadget Use in Elementary School- Age Children.	2023	(Chasanah et al., 2023) shows that children who have time discipline in the use of gadgets show the ability to manage time to learn and play well. These children are more structured in carrying out their daily activities and show more stable learning performance. This study emphasizes that the role of parents and teachers is very important in directing the use of gadgets to remain within a reasonable duration.
2.	Norfadillah, R. A., Ernawati, R., & Wijayanti, T.	The Relationship between Gadget Use and Cognitive Elementary School Age Children at SD Muhammadiyah 5 Samarinda.	2022	(Norfadillah et al., 2022) showed that children with a low duration of gadget use (below 120 minutes per day) tended to have better cognitive abilities compared to children who used gadgets for a high duration. However, not all results showed a statistically significant relationship, but a tendency to decline cognitive function was still seen in the group with high duration of use.
3.	Maulia, R., Jannah, M., & Ariani, D.	The Relations hip between Gadget Play Patterns and Cognitive Abilities and Creative Thinking at Preschool Age (5-6 Years) at Kindergarten- Aisyiyah Bustanul	2020	(Maulia et al., 2020) It shows that there is no link between the gadget play pattern and the child's cognitive ability. However, it was found that there was a relationship between the play pattern of gadgets and children's creative thinking skills. This means that the use of controlled and age-appropriate gadgets can support creativity, although it has not been shown to be significant in improving cognitive abilities.

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4.	Meiri K, E., Supriyatno, E., Damayanti, C. N., & Fatoni, A. F.	The Relationship between Gadget Use and Cognitive Development Level (Achievement Level) in Children Aged 7-11 Years at SDN Kebun Dadap Timur, Sumenep Regency.	2020	(Meiri et al., 2020) This study aims to evaluate the relationship between the use of gadgets and the cognitive development (learning achievement) of children aged 7–11 years at SDN Kebun Dadap Timur, Sumenep. Using a cross-sectional design involving 120 children, the results of chi-square statistical analysis showed that there was no significant relationship between gadget use and children's learning achievement. Although many children use gadgets more than twice a day, this does not have a direct impact on their cognitive development.
5.	Novianti, R., & Garzia, M.	Use of Gadgets in Children; New Challenges for Millennial Parents.	2020	Ria Novianti and Meyke Garzia (2020) highlight the role of millennial parents in accompanying children aged 2–7 years using gadgets. The results of a survey in Pekanbaru show that 40% of children have tantrums when they are not given gadgets, showing a high level of dependence. Although most parents have positive intentions when giving gadgets, research emphasizes the importance of implementing rules of use to prevent negative impacts
6.	Nur, Y., Sary, E., Lestari, D. A., Hafshawaty, S., Zainul, P., & Timur, J.	Th Relationship between the Duration of Gadget Use and the Ability to Remember in Early Childhood (4-6 Years) at Kindergarten Pgri Sempolan, Silo District, Jember Regency.	2024	(Nur et al., 2024). This study focuses on the relationship between the duration of gadget use and the ability to remember in children aged 4–6 years at Kindergarten PGRI Sempolan, Jember. By involving 64 respondents, the results of the study showed that the longer the duration of using gadgets, the greater the impairment of memory skills in children. There is a very strong correlation between the length of time you play gadgets and decreased memory, so parental control and physical activity switching are highly recommended.

7.	Prastiwi, I., Andini, R. F., & Abidanon, A. A.	The duration of gadget use in the development of preschool-age children.	2022	(Prastiwi et al., 2022) This study analyzes the relationship between the duration of gadget use and the development of preschool-age children. Through a cross-sectional design involving 51 children, the results of statistical tests showed a significant relationship: children who used gadgets for longer tended to experience developmental delays. This study suggests the importance of counseling to parents about limiting time to play gadgets in children.
8.	Rahayu, N. K. S., Suarni, N. K., & Margunayasa, I. G.	Literature Study on the Impact of Gadget Use on the Cognitive Development of School-Age Children.	2023	(Rahayu et al., 2023) stated that the use of gadgets has a double impact on children's cognition. On the one hand, if used correctly, gadgets can accelerate children's understanding of subject matter through learning videos or educational applications. On the other hand, uncontrolled use actually causes a decrease in children's ability to focus and memory, especially in problem-solving activities.
9.	Tasya, A., Alini, & Erlinawati.	The relations hip between the duration and intensity of gadget use and the social development of preschool children aged 4-6 years.	2023	(Tasya et al., 2023) highlighting the social aspects that also affect cognitive development. Children with excessive use of gadgets tend to experience impairments in social skills, which then impacts critical thinking and collaboration skills. Children like this also show a decline in the ability to build self-concept.
10.	Trisya, K., Saloka, A., & Gawai, P.	Literature Review: The Use of Gadgets for Children's Development.	2024	Komang Trisya Agustin & Aria Saloka Immanuel (2024) show that the use of gadgets in early childhood can have both positive and negative impacts, but more negative effects are found. Intensive use without parental supervision can hinder the development of children's motor, cognitive, social-emotional, and behavioral development. Measurements in these studies were carried out by questionnaires, interviews, and observations

Based on the findings of a literature review taken from various journals, it was found that the use of gadgets by elementary school-age children has a significant relationship with their cognitive development. Several studies highlight the importance of discipline when using gadgets, where children who have good time management tend to show more stable learning performance (Chasanah et al., 2023). On the other hand, excessive use of gadgets, both in terms of duration and intensity, is often associated with decreased cognitive abilities and disturbances in social skills, creative thinking, and memory (Norfadillah et al., 2022; Maulia et al., 2020; Nur et al., 2024). However, there is also evidence to suggest that the use of controlled gadgets with educational applications can provide benefits in understanding subject matter (Rahayu et al., 2023). Overall, these studies emphasize the importance of

the role of parents in regulating the use of gadgets to remain within reasonable limits to support optimal child development

### **3.1. Results and Discussion**

The development of digital technology has brought major changes in children's lives, including in the process of learning and entertainment. Elementary school-age children now not only learn from books, but also from learning videos, educational applications, and various interactive platforms on their devices. However, this convenience also brings great challenges related to the management of time and content accessed by children.

#### **Patterns of Use of Gadgets for Elementary School Children**

Elementary school-age children usually use gadgets for various activities, ranging from watching videos, playing games, to accessing online learning materials. According to (Rahmawati et al., 2024) there are three general categories of usage patterns: children who use gadgets excessively, children who use them within a certain time limit, and children who use them with time limits and parental supervision.

The riskiest pattern is unrestricted and unsupervised use. In these cases, the child not only experiences a decrease in concentration, but also becomes less sensitive to the surrounding environment and experiences a delay in social development. They tend to be physically and emotionally passive due to interacting with screens too much.

#### **The Negative Impact of Uncontrolled Gadget Use**

Uncontrolled use of gadgets can have a number of negative impacts, especially in the cognitive aspect. Children become less active in critical thinking, have difficulty understanding complex information, and their memory declines. (Rahayu et al., 2023) mentioned that the lack of social interaction due to gadget addiction has a direct impact on cognitive and social-emotional development.

Furthermore, children who are addicted to gadgets also show a tendency to experience concentration and hyperactivity disorders. (Prastiwi et al., 2022) It found that children who used gadgets for more than two hours per day had up to nine times the risk of developmental delays compared to children whose use was restricted.

#### **Positive Impact When Used Wisely**

Although there are many negative effects that arise from excessive use of gadgets, it does not mean that this technology should be avoided completely. If used wisely, gadgets can be a very useful tool in supporting children's cognitive development. For example, children can use interactive learning apps to understand math, reading, and writing in a fun way.

According to (Chasanah et al., 2023) The use of educational applications accompanied by parents can help children in compiling logic, improving memory, and stimulating creativity. Children can also learn independently through age-appropriate learning videos. With a note, the content consumed must be adjusted to the child's developmental stage and needs.

#### **Ideal Time Constraints and the Role of Parents**

Most journals agree that the ideal duration of using gadgets for elementary school children is between 1 to 2 hours per day. This duration is considered sufficient to meet the needs of digital learning and entertainment without interfering with other more important activities, such as social interactions, sports, and outdoor play.

Parents and teachers have an important role in managing the time and content that children access. (Tasya et al., 2023) stated that parental supervision of the duration and intensity of gadget use has been proven to significantly reduce the risk of social and cognitive disorders of preschool to elementary school children. The active involvement of parents in accompanying their children when using gadgets also provides added value. Children not only learn technology, but also learn ethical, moral, and interpersonal communication values through direct interaction with adults

## 3.2. Conclusion

The use of gadgets in elementary school children is an unavoidable phenomenon in today's digital era. Based on the results of the literature review, it can be concluded that the use of gadgets has two opposite sides. If used wisely, with appropriate time limits and educational content, gadgets can play a positive role in supporting children's cognitive development, such as improving memory, logical thinking skills, and helping the process of understanding learning materials.

However, excessive and uncontrolled use of gadgets actually risks lowering children's cognitive function, such as concentration disorders, difficulty in solving problems, and decreased social interaction skills. The consistent use of more than two hours per day has been shown to correlate with various barriers in children's learning development.

Therefore, supervision and active involvement from parents and educators are needed in regulating the time of use of gadgets. The ideal time allocation for using gadgets for elementary school children is in the range of 1–2 hours per day, with supervision of the content consumed. Collaboration between parents and educators is key in optimizing the benefits of technology without sacrificing aspects of children's growth and development, especially their cognitive development.

## References

- Asmawati, L. (2021). The Role of Parents in the Utilization of Digital Technology in Early Childhood. *Journal of Obsession: Journal of Early Childhood Education*, 6(1), 82- 96. <https://doi.org/10.31004/obsesi.v6i1.1170>.
- Chasanah, I., Ratna Utami Nur Ajizah, & Irfan Jauhari. (2023). Parenting Discipline in the Use of Gadgets in Elementary School- Age Children. *Islamic Elementary School (IES)*, 3(1), 73–83. <https://doi.org/10.55380/ies.v3i1.500>
- Juwita, S., & Ernawati, R. (2022). *The Relationship between Gadget Use and Elementary School-Age Children's Morals*. 3(2), 2022. Key, K. (n.d.). *children; development; gadgets*.
- Meiri K, E., Supriyatno, E., Damayanti, C. N., & Fatoni, A. F. (2020). The Relationship between Gadget Use and Cognitive Development Level (Achievement Level) in Children Aged 7-11 Years at SDN Kebun Dadap Timur, Sumenep Regency. *Health Info: Health Info*, 10(2), 259– 266. <https://jurnal.ikbis.ac.id/infokes/article/view/170>
- Noor, F., Mumpuni, R. A., Amaliyah, A., & Laksmiwati, I. (2020). Working Mom Assistance on the Use of Youtube in Children. *Community: Journal of Communication and Information Technology*, 12(1), 40 50. <https://doi.org/10.23917/komuniti.v12i1.10070>
- Novianti, R., & Garzia, M. (2020). Use of Gadgets in Children; New Challenges for Millennial Parents. *Journal of Obsession: Journal of Early Childhood Education*, 4(2), 1000. <https://doi.org/10.31004/obsesi.v4i2.490>
- Nur, Y., Sary, E., Lestari, D. A., Hafshawaty, S., Zainul, P., & Timur, J. (2024). *The Relationship between the Duration of Gadget Use and the Ability to Remember in Early Childhood (4-6 Years) at Kindergarten Pgri Sempolan, Silo District, Jember Regency*. 101–116.
- Prastiwi, I., Andini, R. F., & Abidanon, A. A. 2022. (n.d.). *DURATION OF GADGET USE IN THE DEVELOPMENT OF PRESCHOOL- AGE CHILDREN Volume 08 No 02 of 2022*. 16–22.
- Rahayu, N. K. S., Suarni, N. K., & Margunayasa, I. G. (2023). Literature Study on the Impact of Gadget Use on the Cognitive Development of School-Age Children. *Ideguru: Journal of Teacher Scientific Works*, 9(1), 344–349. <https://doi.org/10.51169/ideguru.v9i1.822>
- Rakhmawati, D., Ismah, I., & Lestari, F. W. (2020). Socialization of the Dangers of Gadget Addiction. *Altruis: Journal of Community Services*, 1(3), 159-164. <https://doi.org/10.22219/altruis.v1i3.12926>
- Rahmawati, S., Mukaromah, N., & Debiyani, E. U. (2024). The Effect of Gadget Use on Children's Cognitive and Moral Development. *Jendela Bunda Journal*.
- Sofiana, S. N. A., Fakhriyah, F. F., & Oktavianti, I. (2023). The Impact of Gadget Use on the Emotional and Cognitive Development of Grade IV Elementary School Students. *Indonesian Gender and Society Journal*, 3(2), 53–59. <https://doi.org/10.23887/igsj.v3i2.50414>
- Tasya, A., Alini, & Erlinawati. (2023). The relationship between the duration and intensity of gadget use and the social development of pre-school children aged 4-6 years. *Journal of Psychiatric Nursing FIKKes University of Muhammadiyah Semarang in collaboration with PPNI Central Java*, 11(1), 69–78.
- Trisya, K., Saloka, A., & Gawai, P. (2024). Literature Review: The Use of Gadgets for Children's Development. *Journal of Education and Teaching Review (JRPP)*, 7(3), 7593–7605. <http://journal.universitaspahlawan.ac.id/index.php/jrpp/article/view/28478%0Ahttp://journal.universitaspahlawan.ac.id/index.php/jrpp/article/download/28478/20232>.