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Exploring the Relationship Between Gadget Use and Learning Focus Among Children with ADHD in Inclusive Schools

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ABSTRACT

Children with Attention Deficit Hyperactivity Disorder (ADHD) often struggle to maintain focus, leading to low participation and poor academic outcomes. While gadgets are frequently viewed as distractions, they also offer potential as interactive learning tools. This study investigates the relationship between gadget use and learning focus among children with ADHD in inclusive schools. A quantitative survey with a correlational design was employed. Two variables were measured: gadget use as a learning medium (X) and the learning focus of children with ADHD (Y). Data were collected from 50 respondents, including classroom teachers, special assistant teachers (GPK), and therapists experienced in supporting children with ADHD using gadgets. A Likert-scale questionnaire was tested for validity and reliability, and data were analyzed using Pearson correlation and regression analysis. Findings showed that gadget use among respondents was relatively high (mean = 39.94). However, correlation analysis indicated no significant relationship between gadget use and learning focus ($r = -0.12$, $p > 0.05$). Regression analysis suggested that increased gadget use did not predict improvements in attention, and in some cases showed a negative trend. These results highlight that high gadget usage alone does not enhance learning focus in children with ADHD. The effectiveness of gadgets depends on structured pedagogical frameworks, appropriate application design, and alignment with learners' characteristics. Gadgets can support ADHD learning only when integrated with tailored instructional strategies. Future research should explore specific app features and teaching models to optimize their educational benefits.

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1. INTRODUCTION

Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by key symptoms such as inattention, hyperactivity, and impulsivity. It typically manifests during childhood and can have an impact on a child's capacity to concentrate, adhere to instructions, and regulate their behavior (Barkley, 2015). ADHD has a substantial impact on the academic and social

development of adolescents (Al-Shukaili, 2024). Children with Attention Deficit Hyperactivity Disorder (ADHD) frequently experience difficulty maintaining concentration while studying. This leads to inadequate academic performance and inadequate engagement in the learning process. Conversely, devices, which have been regarded as a source of distraction for an extended period, have the capacity to serve as interactive learning media that can enhance the engagement and attention of children with ADHD.

Inclusive schools, which enroll and educate all students, including those with special needs or disabilities, encounter distinctive obstacles in facilitating the effective learning and adaptation of children with ADHD (Kemdikrisetk, 2022). Children with ADHD experience significant challenges in moderating themselves, controlling impulses, and maintaining concentration (Andreou & Argatzopoulou, 2024). Devices, apps, multimedia, and instructional games are examples of learning tools that can help them concentrate on their studies. To this end, schools have used a variety of supporting technology-based strategies, such as hiring special assistant teachers (GPK), modifying the curriculum, enlisting the help of psychologists and therapists, setting up teacher training, and encouraging socialization in the classroom (Bastiyan et al, 2023).

Children with ADHD who get technology-based therapies have modest but substantial impact sizes, according to a meta-analysis of randomized effects. Multimedia tutorials (Umroh et al., 2019), games (Kurniawan et al., 2021), and multimedia tutorials (Viona, 2022) are examples of technology-based therapies that show promise in enhancing particular behaviors and cognitive abilities in school-aged children with ADHD (Wong et al., 2023). For students with ADHD, special education is impacted by the incorporation of technology. Technology has been demonstrated to have a positive impact on students' cognitive, social, and emotional development in general education classrooms. In addition to group influence, improved interest and independence, task initiation, and time efficiency when using Chromebooks, consistent technology use is crucial, as is an overall boost in confidence in one's academic and social abilities (Kojayan, 2021).

Gadgets are one way that technology is used to create educational materials. Due to their growing popularity, gadgets are now being used in classrooms. Children in elementary and high school use tablets for a variety of subjects, including learning objectives (Wulandari, 2021). The effectiveness of iPad technology in the classroom is demonstrated by the use of iPads to raise the academic achievement of children with impairments (Chimillar, 2017).

Analyzing how technology affects the learning process of kids with ADHD in inclusive schools is crucial given recent technological advancements. While interactive videos do not significantly correlate with an increased risk of ADHD, increased screen time is, particularly when it comes to instructive and cartoon videos. Parents and educators can implement techniques such as time limits, breaks, and alternative activities to reduce this risk (Liu et al., 2023).

In light of recent technological advancements, it is crucial to examine how technology impacts the learning process of children with ADHD in inclusive schools, particularly in relation to gadget use. There are a number of advantages and disadvantages to using technology in the classroom. While using a device gives students access to more current and comprehensive information, unsupervised use can provide a distraction from unrelated content, such as games and social media, which impairs learning focus. Having the right abilities is also essential while using technology. According to Barkley (2015), technology use needs to be customized to the needs of kids with ADHD. This study supports the idea that gadgets work best when used with appropriate control and time management.

2. METHODS

2.1 Research Type and Setting

This study employed a quantitative, cross-sectional survey design. This methodological approach was chosen because the study aimed to examine the relationship between the learning focus of children with Attention Deficit Hyperactivity Disorder (ADHD) in inclusive educational settings and their use of digital devices as learning tools—without introducing any form of intervention. The investigation focused on two primary variables: the learning focus of children with ADHD (dependent variable, Y) and their use of devices as learning media (independent variable, X).

To assess this relationship, the data were analyzed using descriptive statistics, Pearson's correlation coefficient, and simple linear regression analysis. These statistical methods enabled the researchers to evaluate both the strength and direction of the association between the variables and to test the research hypothesis.

The study was conducted over approximately eight months during the odd semester of the 2024/2025 academic year. It was carried out in several inclusive schools registered in Pekanbaru (Kemdikbud, 2025). The sample comprised 50 respondents selected through purposive sampling. Participants were chosen based on their direct experience in assisting children with ADHD during learning activities involving digital devices. The target population included classroom teachers, special education support teachers (GPK), and therapists working in inclusive school settings in Pekanbaru. Detailed demographic information of the respondents is presented in the following table:

Table 1. Distribution of Respondents Based on Teaching Experience

Teaching Experience	Amount	Percentage
< 5 years	13	26%
6-10 years	24	48%
> 10 years	13	26%

Table 2. Distribution of Respondents Based on School Level

Level of Education	Amount	Percentage
Kindergarten	12	24%
Elementary School	12	24%
Special School	26	52%

Table 3. Distribution of Respondents Based on Educational Qualifications

Educational Qualifications	Amount	Percentage
Diploma	8	16%
Bachelor's Degree	27	54%
Master's Degree	15	30%

2.2 Research Instruments

To answer the research questions and fulfill the research objectives, data was collected using a Likert scale questionnaire. The questionnaire consisted of two sets of 10 questions each: (1) one to measure the frequency and quality of using gadgets as a learning medium and (2) one to measure the level of learning focus in children with ADHD. Pearson's Product-Moment correlation method was used to assess item validity in relation to the overall instrument score. At a significance level of α = 0.05 and n = 50, the critical value of r is r-table ≈ 0.279. According to the test results, all 20 items are deemed genuine since their r-count values are more than 0.279. Cronbach's Alpha was then used to assess the instrument's reliability. The instrument was deemed reliable based on the analytical results, which revealed α = 0.878 for 20 items.

Table 4. Validity Test Results (Item-Total Correlation, Pearson)

Item	Statement	Cal-r	Table-r (n=50, α=0.05)	Desc
1	I use gadgets in the learning process for children with ADHD.	0.612	0.279	Valid
2	Children with ADHD are interested in learning when using gadgets.	0.534	0.279	Valid
3	Gadget-based learning materials are easier for children with ADHD to understand.	0.598	0.279	Valid
4	The use of gadgets can help increase the engagement of children with ADHD while learning.	0.645	0.279	Valid
5	I feel that gadget-based learning applications are helpful.	0.571	0.279	Valid
6	Children with ADHD are more enthusiastic when using gadgets than conventional methods.	0.563	0.279	Valid
7	Gadgets make it easier for teachers/parents to convey material to children with ADHD.	0.602	0.279	Valid
8	Learning using gadgets is more flexible in terms of time and place.	0.587	0.279	Valid
9	The use of gadgets can be tailored to the specific needs of children with ADHD.	0.554	0.279	Valid
10	Gadgets make it easier to provide visual and audio reinforcement in learning.	0.628	0.279	Valid
11	Children with ADHD are more focused when learning using digital media/gadgets.	0.641	0.279	Valid
12	Children are not easily distracted when using gadgets for learning.	0.536	0.279	Valid
13	Children with ADHD can complete learning tasks more quickly with the help of gadgets.	0.593	0.279	Valid
14	The use of gadgets makes children with ADHD calmer when studying.	0.559	0.279	Valid
15	I have observed an increase in the duration of children's focus while studying when using gadgets.	0.673	0.279	Valid
16	Gadgets can help keep children with ADHD focused on one activity.	0.588	0.279	Valid
17	Gadget-based learning makes it easier for children to follow instructions.	0.629	0.279	Valid
18	Gadgets facilitate children to learn independently.	0.574	0.279	Valid
19	The use of gadgets helps reduce disruptive behavior during learning.	0.552	0.279	Valid
20	Children are less likely to engage in unfocused behavior (daydreaming, wandering around) when using gadgets.	0.672	0.279	Valid

4-point Likert scale—SD = 1, D = 2, A = 3, and SA = 4—is used to rate each questionnaire item. There are 20 items in all, and responses can receive a minimum score of 20 and a maximum score of 80. Three categories, low (20–39), moderate (40–59), and high (60–80); are used to interpret the overall result. Accordingly, the degree of device use and learning concentration shown in kids with ADHD increases with the respondent's score.

By guaranteeing the confidentiality of respondent data, granting the option to discontinue participation at any moment, and acquiring written informed consent from each respondent, this study has complied with research ethics guidelines. Through the Lancang Kuning University LPPM's Research Results Seminar, the study's ethical evaluation was examined and institutionally accepted.

3. FINDINGS AND DISCUSSION

3.1 Data Analysis

The following is a summary of the questionnaire results based on 20 questions distributed to 50 respondents in several inclusive schools in Pekanbaru:

Table 5. Summary of Questionnaire Results

No	Statement	SD	D	A	SA
A.	**Questions Related to Gadget Use**				
1	I use gadgets in the learning process for children with ADHD.	2	8	60	30
2	Children with ADHD are interested in learning when using gadgets.	4	12	54	30
3	Gadget-based learning materials are easier for children with ADHD to understand.	0	10	58	32
4	The use of gadgets can help increase the engagement of children with ADHD while learning.	2	6	62	30
5	I feel that gadget-based learning applications are helpful.	0	14	52	34
6	Children with ADHD are more enthusiastic when using gadgets than conventional methods.	2	16	48	34
7	Gadgets make it easier for teachers/parents to convey material to children with ADHD.	2	6	60	32
8	Learning using gadgets is more flexible in terms of time and place.	0	10	56	34
9	The use of gadgets can be tailored to the specific needs of children with ADHD.	2	12	58	28
10	Gadgets make it easier to provide visual and audio reinforcement in learning.	0	10	54	36
B.	**Questions Related to Learning Focus in Children with ADHD**				
11	Children with ADHD are more focused when learning using digital media/gadgets.	2	10	56	32
12	Children are not easily distracted when using gadgets for learning.	4	14	48	34
13	Children with ADHD can complete learning tasks more quickly with the help of gadgets.	2	16	50	32
14	The use of gadgets makes children with ADHD calmer when studying.	4	12	56	28
15	I have observed an increase in the duration of children's focus while studying when using gadgets.	0	10	62	28
16	Gadgets can help keep children with ADHD focused on one activity.	2	14	54	30
17	Gadget-based learning makes it easier for children to follow instructions.	0	12	56	32
18	Gadgets facilitate children to learn independently.	2	12	60	26
19	The use of gadgets helps reduce disruptive behavior during learning.	4	16	48	32
20	Children are less likely to engage in unfocused behavior (daydreaming, wandering around) when using gadgets.	2	14	52	32

Based on the above summary, the following analysis can be conducted:

1. Descriptive Statistics
   The average score for the gadget usage group (X) was 39.94 (SD = 2.43; range = 34–44). In contrast, the rata-rata score for the learning focus group (Y) is 34,18 (SD = 4,14; rentang = 27–46). The maximum score for 10 items on variable X is 40 if each item has a score between 1 and 4 (SD–SA). With an average score of 39.94, it is nearly at the top of the range. Therefore, it may be concluded that the respondents view the degree of device usage as extremely high. On the other hand, the average score of 34.18 for variable Y (learning attention, 10 items, maximum score = 40) shows that children with ADHD have a high level of learning focus, albeit still slightly lower than their level of gadget usage.
2. Pearson Correlation
   A fairly modest negative association between gadget use and learning focus is indicated by the correlation analysis's value of r = -0.12. This indicates that although the use of gadgets is common, learning concentration is not necessarily increased by them; in fact, in certain situations, it may even be significantly reduced.
3. Simple Linear Regression
   The regression equation is Y = 42.40 + -0.21X. Although the effect is not significant (p > 0.05), the negative coefficient suggests that every rise in gadget usage scores has the potential to lower learning focus levels.

The relationship between gadget use and learning focus in children with ADHD can be seen in the following diagram:

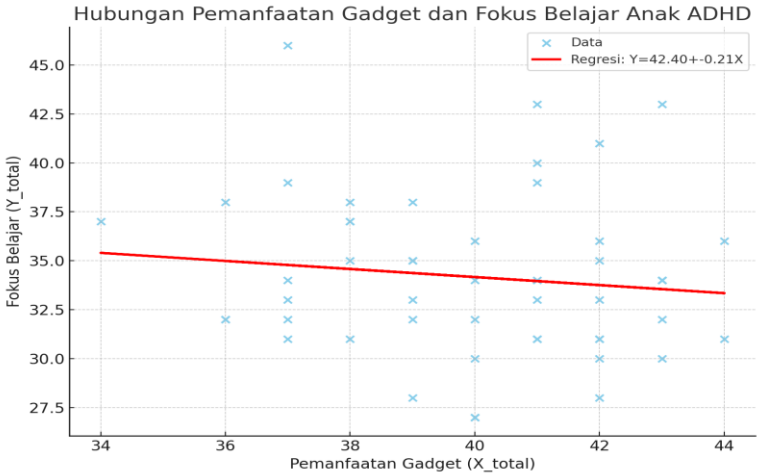

Figure 1. Regression Graph of the Relationship between Gadget Use and Focus on Learning

As illustrated in Figure 1, there is a positive linear relationship between gadget use and the learning focus of children with ADHD. The regression line indicates that as the use of gadgets as learning media increases, there is a corresponding increase in the level of focus exhibited by students during learning activities. This trend suggests that, within the observed sample, appropriate and structured use of gadgets may contribute to enhancing attention and engagement among children with ADHD in inclusive classroom settings. However, it is important to interpret this relationship cautiously, as the strength and significance of the correlation are further examined through statistical analysis presented in the following sections.

3.2 Discussion

The results of this study reveal that although children with ADHD are frequently exposed to gadgets during the learning process, increased gadget use does not significantly enhance their learning focus. This finding underscores the complex interplay between technology use and cognitive characteristics specific to learners with attention-deficit/hyperactivity disorder (ADHD). Several theoretical and practical factors can be examined to contextualize this outcome and guide future educational strategies.

First, the inherent traits of children with ADHD must be considered. According to executive function theory, children with ADHD exhibit impairments in executive functions such as impulse control, sustained attention, and working memory (Barkley, 2015). These deficits mean that children with ADHD are highly sensitive to environmental stimuli and easily distracted, particularly by visually or auditorily stimulating content. Digital devices, by design, are often stimulus-rich environments that may inadvertently contribute to increased distractibility. Without structured guidance and pedagogical intent, the use of gadgets does not inherently promote attentiveness. This supports the notion that unregulated or poorly integrated technology use may not align with the cognitive regulation needs of children with ADHD (Barkley, 2015).

Second, the effectiveness of digital media depends significantly on the appropriateness of media and application design. Instructional design theories highlight the importance of aligning technological tools with learner characteristics to maximize educational benefits (Mayer, 2009). In the context of children with ADHD, applications that are overly stimulating—featuring flashing graphics, loud sounds, or advertisements—may worsen symptoms of inattention and impulsivity. In contrast, applications designed with a minimalist interface, clear instructions, and features such as positive reinforcement can provide a more supportive learning environment (Agustini et al., 2020). Therefore, the benefits of gadget use are not inherent to the medium itself but rather dependent on the pedagogical quality of the selected digital tools. If educators or parents choose applications that are not developmentally appropriate, the use of gadgets may become counterproductive.

Third, the individual variability among children with ADHD also influences how they respond to digital learning tools. ADHD is a heterogeneous condition, and not all children exhibit the same symptoms or learning profiles. While some students may thrive when using interactive technologies due to increased engagement or immediate feedback, others may become overstimulated or find it challenging to maintain task persistence (Dawson, 2019). This variability necessitates the implementation of differentiated instructional strategies. Educators must be attentive to individual learning needs and adapt the use of technology accordingly, ensuring that digital tools serve as a support mechanism rather than a source of distraction or cognitive overload.

Taken together, these findings emphasize that technology alone is not a panacea for improving focus in children with ADHD. Instead, its effectiveness relies on multiple factors, including the instructional approach of educators, the design quality of learning applications, and individualized adaptation based on student needs. The current study supports the view that children with ADHD may benefit more from blended learning environments that incorporate technology judiciously and are complemented by direct instruction, structured routines, and behavioral supports. This aligns with prior research indicating that multimodal and teacher-mediated instruction remains crucial in meeting the educational needs of neurodiverse learners (DuPaul & Stoner, 2014).

Despite the insights offered, the study has several limitations that should be acknowledged. First, the data were collected through teacher self-reports, which may introduce subjective bias. Educators' perceptions of student focus and technology use are influenced by personal beliefs, prior experiences, and contextual factors, which could affect the objectivity of the responses. Second, the absence of direct classroom observation limits the ability to triangulate findings with actual student behaviors. Without observational data, it is difficult to verify the accuracy of teachers' reports regarding students' attentional patterns during gadget-based learning. Third, the findings are based solely on the perspectives of teachers and special education personnel. While these professionals offer

valuable insights, their views may not fully represent the experiences and preferences of the students themselves or their parents. As such, the generalizability of the findings remains limited.

Given these limitations, future research should adopt a more comprehensive approach. Employing mixed-methods designs that include classroom observations, student interviews, and parental feedback would yield a more nuanced understanding of how children with ADHD interact with digital learning tools. In addition, longitudinal studies could explore how sustained gadget use over time impacts attention and academic outcomes among students with ADHD. Such studies would provide valuable data for developing targeted interventions and informing inclusive education practices.

In conclusion, this study contributes to the growing body of literature on technology use in inclusive classrooms by highlighting that increased gadget use does not automatically translate into improved learning focus for children with ADHD. Instead, the utility of digital tools in supporting attention depends on their design, the instructional strategies employed, and the individual characteristics of each learner. Educators and stakeholders in inclusive education must therefore adopt a critical and personalized approach when integrating technology into learning environments for children with ADHD.

4. CONCLUSION

This study concluded that there is no statistically significant relationship between the use of gadgets as a learning medium and the learning focus of children with ADHD in inclusive schools. While gadgets are frequently integrated into classroom practices, their effectiveness for children with ADHD depends on how well their use is tailored to the students' specific cognitive and behavioral characteristics, including the implementation of appropriate time management and control strategies. The findings underscore that high levels of gadget use alone do not enhance attention or focus, highlighting the need for structured pedagogical frameworks and carefully selected digital applications. The study provides valuable insights for teachers, therapists, and assistant teachers in inclusive settings, offering practical considerations for integrating technology more effectively. However, the research is limited by its reliance on teacher self-reports and the absence of direct classroom observations, which may affect the objectivity and generalizability of the results. Future research should incorporate observational methods and include perspectives from students and parents, as well as explore the impact of specific instructional designs or technology-based interventions on the learning outcomes of children with ADHD.

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