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Displacement or Facilitation? Gadget Use and Elementary Students' Sports Motivation

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Abstract

This study investigated the relationship between gadget use and elementary school students' motivation to participate in physical education. Concerns have been raised among parents and teachers regarding the potential negative impacts of excessive gadget use on students' learning interest. Using a quantitative approach, this study examined students from a public elementary school in Tanjungsari, Sumedang, who were selected based on their observed low motivation in physical education lessons. Data were collected through surveys and interviews with physical education teachers to assess students' gadget use patterns and their motivation levels in physical education activities. The findings revealed a significant negative correlation, indicating that increased gadget use was associated with decreased motivation for physical education. Excessive screen time can contribute to reduced physical activity and lack of enthusiasm for exercise. To address this issue, parents are encouraged to regulate screen time, create a balanced routine that includes outdoor activities, and serve as role models for an active lifestyle. Meanwhile, physical education teachers should design more interactive and engaging physical education lessons to rekindle students' interest. Future research should explore effective pedagogical strategies and intervention programs that can improve students' motivation and participation in physical education.

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INTRODUCTION

The development of digital technology has brought significant changes in various aspects of life, including in the world of education. The use of gadgets among children, especially elementary school students, is increasing along with technological advances and the availability of easily accessible devices. Gadgets offer various benefits in learning, such as access to extensive information, interactive learning resources, and the development of digital skills from an early age (Hafilda et al., 2022). However, uncontrolled use of gadgets also has various negative impacts, especially in terms of children's cognitive, social, and emotional development (Shafa et al., 2025)

One of the main problems that arise due to excessive use of gadgets is the decline in student motivation in various activities, including sports. Students who spend more than two hours per day using gadgets are at risk of experiencing behavioral changes, such as increased bad temper, decreased social interaction, and decreased interest in physical activity (Peni et al., 2022). This is a challenge for physical education in schools, where sports motivation is an important factor in increasing student participation, forming healthy living habits, and developing the physical and mental skills needed for daily activities (Aryadi, 2020).

Motivation in sports can be influenced by various factors, both intrinsic and extrinsic. Intrinsic factors include personal satisfaction and the desire to improve skills, while extrinsic factors can come from social environmental support, such as peers, teachers, and parents (Prameswari et al., 2025). In addition, students who take part in extracurricular soccer tend to have high levels of motivation, this is supported by a strong will within themselves and encourages students who have talent to excel, thus increasing students' motivation to do physical activities by doing extracurricular soccer activities (Rustandi et al., 2024). In this context, excessive use of gadgets can reduce the time students spend on physical activity and have an impact on decreasing their motivation to exercise. Previous studies have shown that students who use gadgets more often tend to have lower levels of involvement in sports activities at school (Wahyuni et al., 2019).

Parents play an important role in supervising and controlling their children's use of gadgets. Several studies have shown that parenting patterns that provide unlimited access to gadgets can lead children to patterns of interaction with technology that are less beneficial for their cognitive and social development (Shah et al., 2021). Therefore, a balanced time management strategy is needed between gadget use and physical activity to ensure that students remain motivated to exercise and can get the optimal benefits of technology.

On the other hand, sports teachers have a crucial role in motivating students who are exposed to excessive use of gadgets to remain active in physical activities and sports learning. According

To Schiff and (Schiff & Supriady, 2023), a learning approach based on the Sport Education Model (SEM) can increase student motivation by providing a more interactive, competitive, and enjoyable learning experience. This model emphasizes the active involvement of students in the teaching and learning process, so that it can divert their attention from dependence on gadgets. In addition, research conducted by (Kumala et al., 2019). Shows that screen exposure of more than two hours per day can reduce physical activity and students' interest in sports, so teachers need to design innovative teaching methods so that sports remain attractive to students. Approaches such as gamification in sports learning have also been shown to be effective in increasing student engagement (Azid et al., 2023). Therefore, sports teachers not only act as instructors, but also as motivators who are able to create a dynamic, interesting learning environment and are able to stimulate students' interest in physical activity, even though they have been exposed to gadgets for a high duration.

Furthermore, elementary school students are in a stage of social and emotional development that makes them more likely to obey authority figures, including teachers, especially when given clear and consistent guidance. According to (Hastuti, 2016), elementary school children are in the industry vs. inferiority stage, where they begin to develop self-confidence and competence through positive learning experiences. The level of student attendance towards teachers is influenced by various factors, including teaching methods, teacher-student relationships, and a conducive school environment (Pahmi et al., 2018). Research by (Shah et al., 2021), shows that students who have good emotions with teachers tend to be more obedient and show higher engagement in learning.

However, this compliance can decrease if students are accustomed to the freedom of using gadgets without supervision, which can cause distractions and lack of discipline in following teacher instructions (Wahyuni et al., 2019). Therefore, a more interactive approach and positive discipline from teachers are needed to maintain the level of student compliance in the learning environment, including in sports subjects that require discipline and active involvement. Elementary school (SD) students are in a stage of rapid cognitive and motor development, where they tend to have high curiosity and need sufficient physical activity to support their growth. According to (Pangrazi & Beighle, 2019), elementary school children are in the concrete operational stage, which means they learn more effectively through direct experience and physical activity.

Therefore, this study aims to examine the relationship between Gadget use and elementary school students' sports motivation. Unlike previous studies that emphasize more on the social and cognitive impacts of Gadget use, this study specifically explores how the intensity of Gadget use affects students' motivation to participate in sports activities at school. By understanding this

relationship, it is hoped that elementary school sports teachers can formulate effective strategies in managing Gadget use so that it has a positive impact on their students' sports motivation.

The hypothesis in this study is as follows: Null hypothesis (H_0): There is no significant relationship between gadget use and elementary school students' sports motivation. Alternative hypothesis (H_1): There is a significant relationship between the use of gadgets and the motivation of elementary school students, where the level of gadget use can affect their motivation to exercise, both positively and negatively.

Thus, this study is expected to contribute to the understanding of the impact of Gadget use on students' sports motivation and provide recommendations for parents and sports subject teachers in schools in managing the balance between technology and physical activity among elementary school students, as well as how to utilize students' tendency to use Gadgets to increase learning motivation which can ultimately improve students' sports learning achievements.

METHODS

Employing a quantitative research design, this study aimed to examine the statistical relationship between the variables of gadget use and elementary school students' sports motivation. This approach was selected to facilitate systematic and objective data analysis, thereby enabling a rigorous assessment of the association between these constructs. Specifically, a correlational research design was utilized to determine the presence and direction of any relationship between the intensity of gadget use and the level of sports motivation among the elementary school student population under investigation.

Population and Samples

The target population for this study comprised all public elementary school students within the Tanjungsari District. A purposive sampling technique was employed to select the research sample based on specific criteria relevant to the study's objectives. Following preliminary interviews with sports teachers, the sample was determined to include students in grades IV, V, and VI, yielding a total of 94 participants. This grade-level selection was predicated on the rationale that students in these upper elementary grades possess established fundamental sports skills and exhibit a comparatively higher degree of exposure to digital devices than their younger counterparts.

Materials and Apparatus

Data collection was conducted using a questionnaire designed to assess the two primary variables under investigation: gadget usage and student sports motivation. The gadget usage variable was operationalized through a 30-item instrument exploring the frequency, types of activities, and duration of digital device use in the participants' daily routines. Student sports motivation was measured using a 28-item questionnaire encompassing aspects of students' interest, enthusiasm, and

commitment towards engaging in sports activities, both within and outside the school setting. Each item in both questionnaires employed a Likert scale to capture the intensity of responses for each variable. Prior to data collection, the validity and reliability of both instruments were rigorously assessed to ensure the accuracy and internal consistency of the gathered data.

Procedures

This information is likely to merge the actual procedures with the materials and apparatus because it is hard to say what the participants were doing without indicating what they were doing it with. There are some fairly standard elements in the procedure. They include, (a) variables that are manipulated and measured, including independent and dependent variables, (b) any conditions or groups that you intend to compare, (c) how participants are assigned to, or placed in, groups, (d) the role of the researcher in the session, (e) the directions that participants received, (f) the activities in which the participants engaged. Finally, include a statement with the procedure that participants provided informed consent. When you write your own procedure section, you can determine whether to include how you obtained informed consent. Strictly speaking, it is not part of the data collection process, so you can logically argue that it does not belong in this subsection.

Data Analysis

Each item within the questionnaires utilized a Likert scale to capture the intensity of responses for each construct. To ensure the integrity of the data, the instruments underwent rigorous psychometric evaluation, including assessments of validity and reliability, prior to their administration.

The collected data were subjected to a multi-stage analytical process. First, the normality of the distribution for both gadget usage and student sports motivation scores was assessed using the Kolmogorov-Smirnov test. Subsequently, Pearson's product-moment correlation analysis was employed to examine the magnitude and direction of the linear relationship between the two primary variables. This statistical test aimed to determine the presence of a significant association between the extent of gadget use and the level of sports motivation among the participants.

RESULT

Distribution of Gadget Usage Score and Sports Motivation Score data for grades 4, 5, and 6 of children in one of the Public Elementary Schools in Tanjungsari District Based on the results of the Kolmogorov-Smirnov normality test, the test statistic value is 0.122, and the significance value (p) is 0.120. The data can be said to be normally distributed because there is insufficient evidence to reject the null hypothesis because the p value is higher than 0.05.

Table 1. The Normality Test for Gadget Use

Fitness Statistics		
Test	Statistics	P
Kolmogorov-Smirnov	0.122	0.120

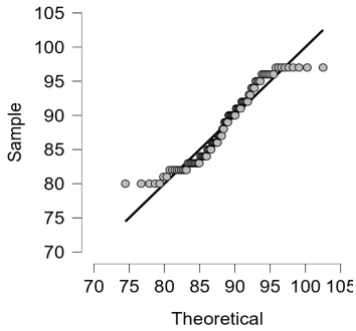

Fig 1. The Linearity Test Result for Gadget Use

These results indicate that the data used in this study to measure the intensity of use of elementary school students in Tanjungsari sub-district, are relatively normally distributed and linier which allows the application of parametric statistical methods with acceptable normality assumptions. Used to assess the suitability of the data distribution with the expected theoretical distribution. The graph shows that the data points tend to follow the diagonal line with little deviation at the point, indicating that the data has a distribution that is close to a normal distribution.

Table 2. The Normality Test for Sport Motivation

Fitness Statistics		
Test	Statistics	P
Kolmogorov-Smirnov	0.175	0.006

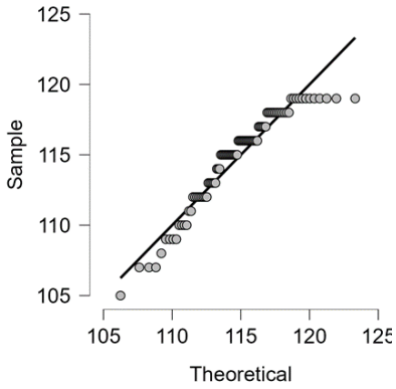

Fig 2. The Linearity Test Result for Sport Motivation

Prior to conducting correlation analysis, the distribution of the sports motivation data for elementary school students in grades IV, V, and VI within the Tanjungsari sub-district was assessed for normality using the Kolmogorov-Smirnov test. The results of this analysis yielded a test statistic of 0.175 with a significance value (p) of 0.006. As this p-value was below the conventional alpha level of 0.05, the null hypothesis of a normal distribution was rejected, indicating that the sports motivation data were not normally distributed.

Table 3. The Correlation Results

Pearson Correlation				
		N	Pearson is r	P
Gadget usage	Sport motivation	94	-0.886***	< .001

Based on table 3, It can be stated that the overall results of sports motivation and total scores of gadget use have a very strong negative relationship, according to the results of the Pearson correlation analysis ($r = -0.886$, $p < 0.001$). A statistically significant relationship is indicated by a very low p value (<0.001). The relationship between increased Gadget use and lower

motivation to exercise is further supported by the 95% CI correlation coefficient, which is between -0.923 and -0.832. According to the findings of this study, it shows that increased Gadget use is usually associated with a decrease in personal desire to exercise. So, it can be concluded that the high intensity of students' Gadget use will have a negative impact on their sports motivation.

DISCUSSION

The results of this study indicate a significant negative correlation between Gadget use and sports motivation in elementary school students in Tanjungsari sub-district. Pearson correlation analysis revealed that the higher the intensity of Gadget use, the lower the students' motivation to participate in physical activity. This finding reinforces previous studies which state that excessive exposure to technology can reduce students' interest in exercising and increase the tendency for sedentary behavior (Yuaviki et al., 2020). Furthermore, mention the fact that most students tend to use Gadgets to access digital games, social media, and entertainment videos rather than to obtain information and support learning, several studies have shown several arguments. According to research conducted by (Santi et al., 2021), more than 70% of elementary school students use Gadgets mainly to play games and watch videos, while only a small portion uses them for educational activities. This is reinforced by the findings of Pratama & Yulianti (Aubryla & Ratnawati, 2023), which show that social media is the main platform that attracts students' attention, reducing the time that should be used for learning. Easy access to entertainment content causes students to be more exposed to passive activities that have minimal academic value compared to exploring learning materials that can improve their understanding. As a result, this habit can have a negative impact on learning motivation, because students are more accustomed to instant entertainment than activities that require cognitive effort and perseverance. Therefore, guidance is needed from parents and teachers in directing the use of Gadgets to be more productive and support students' academic development.

Looking at the results and considerations of the opinions above, the phenomenon of low learning motivation of students exposed to excessive use of Gadgets can be explained through several mechanisms. First, excessive use of Gadgets can distract students from physical activities that require effort and consistency. Students who are accustomed to instant entertainment through social media, digital games, or video streaming tend to prefer passive activities compared to activities that require physical movement. This happens because the use of Gadgets provides instant stimulation and quick gratification, which makes physical activities such as sports feel more tiring and less interesting to them. As a result, the habit of exercising which should be part of a healthy lifestyle is increasingly

being replaced by the habit of sitting for hours in front of the screen.

Research by (Setiawati et al., 2019) found that high intensity of social media use is associated with low exercise habits in adolescents. This study revealed that the more time students spend surfing social media, the less time they allocate for physical activity. Social media often encourages sedentary habits, where adolescents prefer to continue browsing digital content, interacting boldly, or watching videos, rather than doing more energy-demanding physical activities. Being drawn to addictive social media can also reduce their motivation to participate in school and out-of-school sports activities.

In addition, research by (Mahendra et al., 2021), shows that there is a negative correlation between playing online games and interest in sports in students. Online games offer an interesting and interactive virtual world, which often makes players spend hours playing without realizing the impact on their physical habits. Students who are addicted to online games tend to ignore sports because they are more focused on achievements in the virtual world than on improving physical fitness in the real world. In addition, online games that require high time and concentration can also cause mental fatigue, so that students feel less motivated to do physical activities after playing for a long time. Overall, the increasing intensity of Gadget use, both in the form of social media and digital games, contributes to the decline in sports habits in adolescents. Therefore, preventive measures are needed, such as wiser screen time management, providing education about the importance of physical activity, and creating an environment that encourages a balance between technology use and a healthy lifestyle. Thus, the negative impact of excessive Gadget use on sports habits can be minimized, so that adolescents' physical and mental health is maintained.

Second, uncontrolled use of gadgets can have an impact on physical and psychological health, including an increased risk of obesity and decreased mental well-being due to lack of social interaction and physical activity (Syifa et al., 2019). Children who spend more time with gadgets tend to have longer sitting habits and rarely do physical activity, which can ultimately lead to weight gain and metabolic disorders. In addition, from a psychological perspective, excessive use of gadgets can also cause stress, anxiety, and sleep disorders due to prolonged screen exposure and lack of direct social interaction (Kamaruddin et al., 2023). Excessive screen exposure, especially before bedtime, can cause sleep disorders that contribute to fatigue, decreased memory, and lack of enthusiasm for learning. In addition, the habit of accessing digital content that is more interesting than the subject matter makes students less motivated to complete their academic assignments. As a result, children who interact more often with digital devices compared to their peers tend to have difficulty in building social skills and managing emotions well. Therefore, it is important for parents and

educators to supervise and limit the use of gadgets so as not to disrupt the balance between digital activities and children's social and physical lives.

This study is also supported by various other studies that found that long-term use of gadgets is associated with decreased sports motivation in children and adolescents. For example, research by (Ludwig et al., 2018)showed a substantial correlation between the use of digital technology and increased sedentary behavior in adolescents. In addition, research by (Daryanto et al., 2022) stated that excessive interaction with gadgets can have a negative impact on students' physical health, while research. by (Rahmania et al., 2023), found that excessive use of gadgets reduces students' enthusiasm for participating in physical activities.

The implications of these findings indicate the importance of monitoring and managing children's use of gadgets. Parents, teachers, and policy makers need to collaborate to create an environment that encourages an active lifestyle.

Parents need to educate their children about the wise and productive use of gadgets. For example, they can direct their children to utilize technology in activities that support learning, such as accessing educational materials or taking brave classes. Thus, gadgets can still be used positively without inhibiting learning motivation. Limiting the use of gadgets also needs to be balanced by creating a conducive learning environment at home. Parents can implement a regular study schedule, build positive communication about the importance of education, and provide examples by reducing dependence on gadgets in everyday life. In addition, active involvement in children's learning activities, such as accompanying them when doing assignments or building interesting discussions, can increase their interest and motivation to learn.

On the other hand, sports teachers are not only responsible for teaching physical skills, but also have a role in forming a positive attitude towards physical activity and a healthy lifestyle from an early age. Therefore, the application of interesting and innovative learning methods is the main key to increasing student participation and enthusiasm in participating in sports lessons. One approach that can be applied is a game-based learning approach, where sports activities are packaged in the form of fun and competitive games. This approach can increase student engagement, reduce boredom, and make them more motivated to be active. In addition, the use of various learning strategies, such as project-based learning, collaborative methods, and technology integration in sports learning, can help improve the learning experience to be more interesting and adapt to the diverse needs of students.

Equally important, policy makers, such as the Department of Education and school principals, have the responsibility to design policies that balance the use of technology for learning and the implementation of excessive use of Gadgets. One step that can be taken is to formulate clear regulations regarding the

use of Gadgets in schools, such as limiting access during class hours except for educational purposes. With this policy, students can focus more on the learning process without being distracted by interference from social media or digital games. In addition, schools can also implement digital literacy programs to equip students with an understanding of the wise and responsible use of technology. Policy makers also need to encourage healthy technology integration in learning, for example by providing interactive educational devices and platforms that support student involvement in the learning process. In this way, the use of Gadgets can be directed to increase learning motivation, not just entertainment that reduces academic productivity. In addition, training for teachers in managing technology-based learning is also an important aspect so that the use of Gadgets can provide optimal benefits for students.

CONCLUSION

The result of this research shows that Gadget usage has a significant negative relationship with students' sports motivation. Excessive use of gadgets can result in decreased student sports motivation. Parents and teachers have an important role in supervising children in using gadgets. It is expected that parents can supervise children in using gadgets and encourage children to be able to do activities. In addition, sports teachers must design sports learning as interesting as possible in order to increase students' interest in doing sports activities. It is expected that further research can further identify related strategies to increase sports motivation, in addition to looking for other factors that can influence students' interest in doing physical activities.

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