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The Relationship between Gadget Addiction, Student's Knowledge, and Participation Level in Traditional Games

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Abstract: Traditional games are one type of physical activity by children beneficial for their growth and development. Traditional games also benefit children's psychomotor, cognitive, and emotional development. However, traditional games fade by the day. On the other hand, online games have become a part of a new culture for younger generations. This shows that technological advances impact children's physical activities. This study aims to determine the relationship between gadget addiction, students' knowledge, and participation level in traditional games in Indonesia. This correlational study used the survey method. The sample of this study was 271 elementary school students in Central Java, Indonesia. The data collection used a questionnaire consisting of a gadget addiction questionnaire, a traditional games' knowledge level questionnaire, and a traditional games' participation level questionnaire. Data analysis used bivariate correlation analysis and simple regression analysis. We obtained the following results. 1) The correlation value between gadget addiction and student's knowledge level is -0.750 with a p-value < 0.05; the effect of gadget addiction on student's knowledge level is 56.25%. 2) The correlation value between gadget addiction and student participation level is -0.725 with a p-value < 0.05; the effect of gadget addiction on student participation level is 52.56%. The novelty of this study is that previous studies did not specifically discuss the relationship between gadget addiction and traditional games. Previous studies have discussed these two variables separately. The research provides insight that gadget addiction indirectly impacts children's physical activity, whereas traditional games are a form of physical activity that children can implement and are a national cultural heritage that must be preserved. We concluded that 1) There is a significant relationship between gadget addiction and students' knowledge level of traditional games; 2) There is a significant relationship between gadget addiction and student participant level of traditional games; increasing the value of gadget addiction will affect declining students' knowledge and participation level in traditional games. Children's knowledge and participation in playing traditional games can increase the existence of traditional games and minimize the negative impact of excessive use of gadgets.

Keywords: gadget addiction, technological advances, traditional games, cultural heritage.

小工具成癮、學生知識和傳統遊戲參與水平之間的關係

摘要：傳統遊戲是一種有益於兒童生長發育的體育活動。傳統遊戲還有益於兒童的心理運動、認知和情感發展。然而，傳統遊戲日漸式微。另一方面，網絡遊戲已經成為年輕一代新文化的一部分。這表明技術進步會影響兒童的身體活動。本研究旨在確定小工具成癮、學生的知識和印度尼西亞傳統遊戲的參與水平之間的關係。本次相關研究採用調查法。本研究的樣本是印度尼西亞中爪哇的271名小學生。數據收集使用的調查問卷包括小工具成癮調查問卷、傳統遊戲知識水平調查問卷和傳統遊戲參與水平調查問卷。數據分析採用雙變量相關分析和簡單回歸分析。我們得到了以下結果。1)電子產品成癮與學生知識水平之間的相關值為負的0.750， p 值 <0.05 ；電子產品成癮對學生知識水平的影響為56.25%。2)電子產品成癮與學生參與水平之間的相關值為負的0.725， p 值 <0.05 ；電子產品成癮對學生參與水平的影響為52.56%。這項研究的新穎之處在於，之前的研究並沒有具體討論電子設備成癮與傳統遊戲之間的關係。以前的研究分別討論了這兩個變量。該研究表明，電子產品成癮會間接影響兒童的體育活動，而傳統遊戲是兒童可以進行的一種體育活動，是必須保護的民族文​​化遺產。我們得出的結論是：1)電子產品成癮與學生對傳統遊戲的知識水平之間存在顯著關；2)小玩意成癮與學生傳統遊戲參與度之間存在顯著關係；增加小工具成癮的價值將影響學生對傳統遊戲的知識和參與水平的下降。兒童對玩傳統遊戲的了解和參與可以增加傳統遊戲的存在，並最大限度地減少過度使用小工具的負面影響。

关键词：電子產品成癮、技術進步、傳統遊戲、文化遺產。

1. Introduction

The development of gadget usage that carries the advantages of respective technology is evenly distributed across all ages, including children. The survey revealed that 98% of the respondents of children in Southeast Asia use gadgets or mobile devices [1, 2]. According to the study conducted by Asian parent Insights in 2014, studies in the Southeast Asia region involved at least 2,417 parents having gadgets and children aged 3-8 years in 5 countries, including Singapore, Thailand, the Philippines, Malaysia, and Indonesia. According to the parent sample's number, 3,917 samples of children aged 3-8 years. According to the data, 98% of children aged 3-8 years old, 67% use gadgets owned by their parents, 18% use gadgets owned by close family, and the remaining 14% use their gadgets [1].

Gadgets are electronic devices created with various interesting features that can present different news, social networks, hobbies, health, and entertainment. Gadgets are sophisticated items that can accommodate all human activities, such as work, education, business, health, and beauty [3]. The gadget term describes various digital products such as smartphones, tablets, laptops, and the like. Therefore, it is not surprising that society's gadget usage reveals an increasing trend. Approximately 45 million people use the internet, and

nine million access it via cell phones [3]. Excessive and uncontrolled gadget usage can cause problems in both physical and psychological health. Children with low-intensity gadget usage showed appropriate developmental test results, whereas high-intensity gadget usage results showed questionable results (speech-language disorders, emotional disturbances, and cognitive impairments) [2]. CNN Indonesia reports that 70% of children aged six months to 4 years are allowed to play with gadgets while their parents are working, 65% of children are given gadgets in public places so they do not interfere with their parents' activities; then, about 72% of the gadgets used by children under eight years are smartphones and tablets [4]. The widespread use of devices due to technological advances causes children to become sedentary and spend more time in front of their gadgets rather than playing with their friends, impacting their physical activity. The risk of obesity and an increasingly sedentary lifestyle increases for children due to frequent playing online games, surfing in cyberspace, and watching television for a long time [5, 6].

Excessive smartphone and gaming device usage can affect the development of the right brain related to concentration, memory storage, and emotional regulation. Gadget usage tends to develop the left brain so that the development of the right brain is hampered and causes a person's attention, memory, and emotional

problems [4]. Excessive and uncontrolled gadget usage can have an addictive effect on their users. Based on research conducted on 200 adolescents aged 17-18 years, there are four symptoms of gadget addiction, namely 1) inability to control desire; 2) anxiety and feeling lost; 3) withdrawal and escape; 4) productivity loss [7].

Play is part of the children's world and an essential aspect of children's activities. Through play, children can explore the world, get pleasure, and interact with the environment [8, 9]. Playing games can develop the physical ability, new skills, social-emotional and cognitive abilities, increase creativity, language skills, behavior, and sensory acuity, release tension, and therapy for physical, mental, or other developmental disorders [10, 11]. Traditional games are a form of physical activity with cultural values [8]. These games and sports reflect different cultural expressions and create bridges between cultures to understand each other. Preservation and promotion of traditional games and sports provide a critical and essential contribution to the world's cultural heritage [12]. Previous research states that traditional games benefit children's development, especially psychomotor, cognitive, and emotional child development [8].

Furthermore, previous research stated that there are nine types of traditional games in Semarang, Central Java. This traditional game is a tool for children to gain movement experience that is useful for children's growth and development [13]. The results of other studies also state that traditional games can improve motor fitness performance, such as physical fitness, speed, reaction time, and balance components [14]. Nowadays, traditional games have begun to be abandoned by children; even some children have no idea about traditional games. Children only do physical activities at school as part of the educational process. Several factors cause the extinction of traditional games, such as (a) there is no place to play, (b) lack of playing time due to higher educational requirements, (c) modern games from overseas pushed back traditional games; overseas games do not take up space, can be done at any time without being constrained by time and do not need to wait for other people to play, and (d) unconnected of cultural inheritance due to the lack of records, documents, and socialization of community cultural products to the next generation [15]. Although traditional Central Java games have essential benefits for children's growth and development, the gadgets that dominate children's daily activities threaten their existence.

According to previous research, there is a significant influence between the uses of gadgets on the social development of children aged 3-5 years [16]. Other studies also state that gadget addiction affects children's sleep quality [17]. Further studies showed that the current era of digitalization has increasingly

threatened the existence of traditional games. The rise of online games is increasingly making the popularity of traditional games sink. Children who are lazy to move tend to choose games that do not involve enough physical activity. Children prefer to sit in front of the television, computer, laptop, and cell phone to play games [18]. Based on the background of the problem disclosed, the research question in this paper is the relationship between gadget addiction, students' knowledge, and participation level in traditional games. This study aims to determine the relationship between gadget addiction with students' knowledge level and participation level in traditional games' and determine the effect of gadget addiction on students' knowledge level and participation level in traditional games.

2. Method

This correlational study used a cross-sectional approach. The survey with purposive sampling involved two hundred seventy-one elementary school students aged 10-13 in Central Java. The sample selection used criteria including elementary school students aged 10-13 years and willing to fill out all the questionnaires given. Three questionnaires consisted of 1) 21 questions on gadget addiction; the questionnaire used the criteria for testing validity with Sig. < 0.05 for all questions, with a Cronbach's Alpha value of 0.880, used to examine its reliability [19]; 2) 19 questions of traditional games' knowledge level, the questionnaire was tested for validity with Sig. < 0.05 for all questions, with a Cronbach's Alpha value of 0.778, used to examine its reliability; 3) 14 questions of traditional games' participation level, the questionnaire was tested for validity with Sig. < 0.05 for all questions, with a Cronbach's Alpha value of 0.775, was used to examine its reliability. The measurement used a Likert scale with a range of 1-4.

Table 1 Question instrument grid of gadget addiction, knowledge level of traditional games', and participation level of traditional games' (Developed by the authors)

No.	Measured Aspect	Indicator
1	Gadget addiction	1. Salience 2. Mood modification 3. Tolerance 4. Withdrawal 5. Conflict 6. Relapse
2	Knowledge	1. Understanding 2. Memory
3	Participation	1. Demonstration 2. Involvement

The data collection procedures in this study were 1) The subject received an explanation of the background of data collection, 2) The subject received an explanation of the stages they had to do, 3) The subject filled out a letter of approval to become a respondent, 4) The subject received an explanation how to fill out a

gadget addiction questionnaire, knowledge level of traditional games' questionnaire, and participation level of traditional games' questionnaire, 5) The subject fills out three types of the questionnaire: 1) a gadget addiction questionnaire, 2) knowledge level of traditional games' questionnaire, and 3) participation level of traditional games' questionnaire with the help of their parents.

The values were as mean ± SD. The normal distribution of the sample used the Kolmogorov-Smirnov test. A bivariate correlation analyzed the relationship between variables. The effects of gadget addiction on the knowledge level of traditional games and the participation level of traditional games used simple regression analysis. All results were analyzed using SPSS (Version 21; SPSS Inc, Chicago, IL).

3. Results and Discussion

Based on the data obtained, the distribution age data of the samples in this study were 16.61% aged ten years, 36.90% aged 11 years, 29.15% 12 years old, and 17.34% 13 years old.

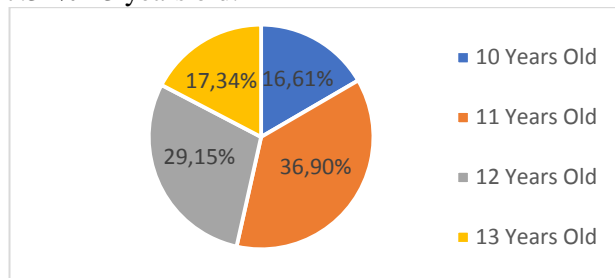


Fig. 1 Respondents age data (Developed by the authors)

Based on the accumulated gadget usage data in one day, 40.96% use gadgets for less than 1 h, 44.65% use gadgets for 1–6 h, and 14.39% use gadgets for 7–12 h.

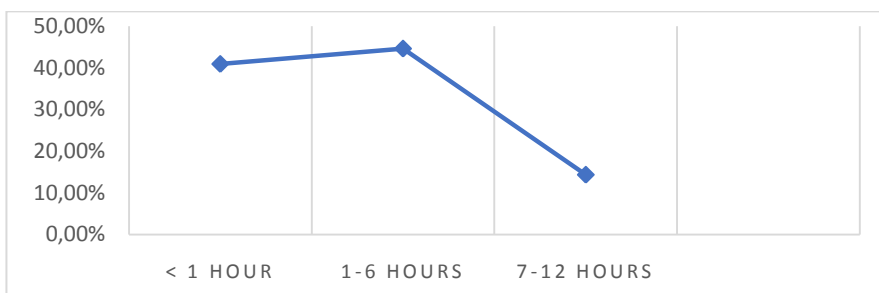


Fig. 2 Gadget usage data (developed by the authors)

Based on the research data, the data on gadget usage at each age are 1) 10 years old: 46.67% used gadgets for < 1 hour, 42.22% used gadgets for 1-6 hours, and 11.11% used gadgets for 7-12 hours; 2) 11 years old: 42.00% used gadgets for < 1 hour, 50% used gadgets for 1-6 hours and 8% used gadgets for 7-12 hours; 3) 12 years old: 41.77% used gadgets for <1 hour, 44.31%

used gadgets for 1-6 hours and 13.92% used gadgets for 7-12 hours; 4) 13 years old: 31.91% used gadgets for < 1 hour, 36.18% used gadgets for 1-6 hours and 31.91% used gadgets for 7-12 hours. In other words, for age 10 years old, the majority used gadgets for 1 h and less, while age 11, 12, and 13 years old shows that the majority used between 1 to 6 h per day.

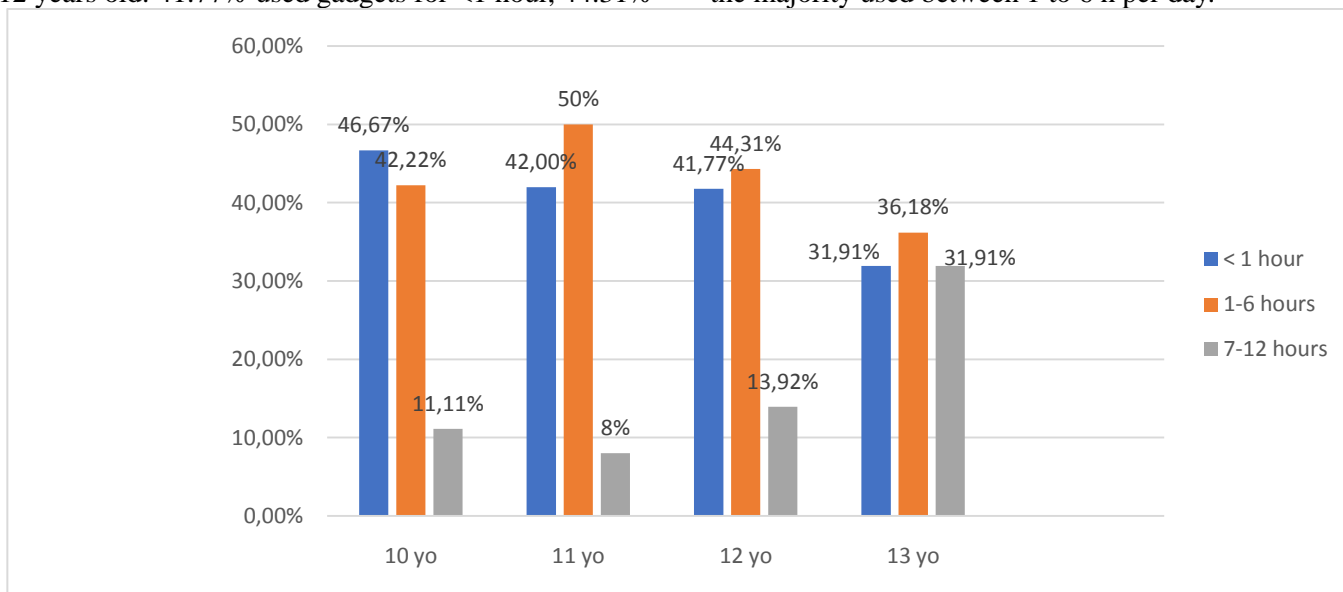


Fig. 3 Gadget usage data based on respondent age (Developed by the authors)

Based on the data obtained, the types of gadgets used by the respondents were: 1) 78.60% used only

smartphones; 2) 8.49% used smartphones and laptops; 3) 3.69% used smartphones and tablets; 4) 3.69% only used tablets; 5) 0.74% used tablets and laptops; 6) 0.74% used laptops, and 8) 4.06% used other devices.

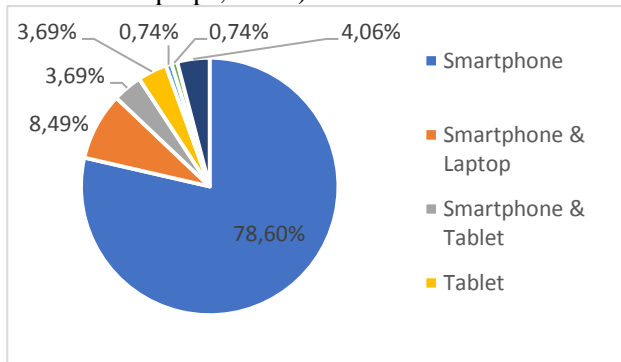


Fig. 4 The types of gadgets used (Developed by the authors)

Based on the data obtained, gadget addiction in children is 2.95% (very high), 45.39% (high), 50.92% (low), and 0.74% (very low). On the other hand, student knowledge-level data in Central Java showed 52.03% excellent category, 36.16% - good category, 10.70% - poor category, and 1.11% - inferior category. The student participation-level data in Central Java showed 58.30% - excellent category, 30.63% - good category, 9.96% - poor category, and 1.11% - inferior category.

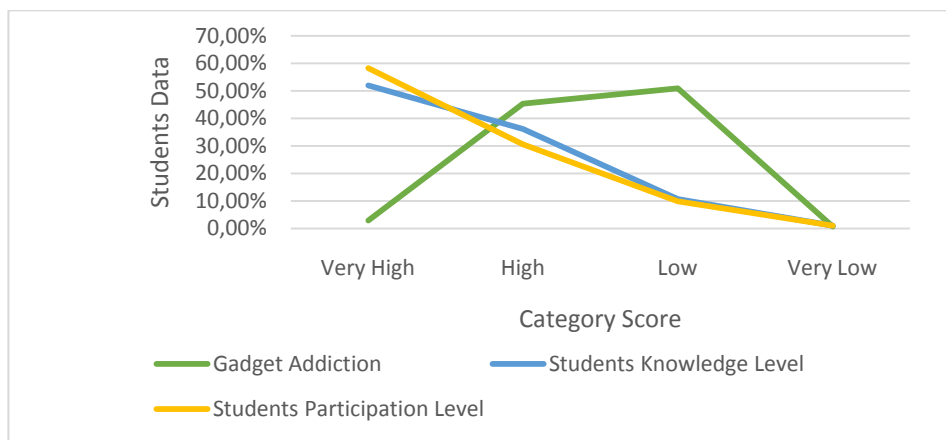


Fig. 5 Gadget addiction, students' knowledge, and participation level (Developed by the authors)

The data in Table 2 show the relationship between gadget addiction and students' knowledge level in Central Java.

Table 2 Correlation and regression value between gadget addiction and students' knowledge level (Developed by the authors)

Variable	Students' knowledge level	p-value
Gadget addiction correlation score	-.750	.000
Regression score	.563	.000

The correlation value between gadget addiction and students' knowledge level of traditional games is -0.750, with a significance value of 0.000. Thus, a significant relationship exists between gadget addiction and the student's knowledge level of traditional games with a high category correlation value. In other words, increasing the value of gadget addiction will affect declining students' knowledge of traditional games. The effect of gadget addiction on students' knowledge level of traditional games is 56.25%; therefore, the student's knowledge level of traditional games is 56.25% influenced by gadget addiction, and other factors influence 43.75%.

The data in Table 3 show the relationship between gadget addiction and students' participation level in Central Java.

Table 3 Correlation and regression value between gadget addiction and students' participation level (Developed by the authors)

Variable	Students' participation level	p-value
Gadget addiction correlation score	-.725	.000
Regression score	.526	.000

The correlation value between gadget addiction and traditional students' participation level in traditional games is -0.725, with a significance value of 0.000. Thus, a significant relationship exists between gadget addiction and students' participation level in traditional games with a high category correlation value. In other words, increasing the value of gadget addiction will affect declining students' participation in traditional games. The effect of gadget addiction on students' participation level in traditional games is 52.56%; therefore, this participation level is 52.56% influenced by gadget addiction, and other factors influence 47.44%. The study results show a relationship between gadget addiction, students' knowledge, and participation level in traditional games. The results of the correlation between each variable have a negative value, meaning that increasing the value of gadget addiction will decrease the students' knowledge and participation level in traditional games.

Playing is a form of physical activity that benefits children's development, mastery of basic movements, and enhancement of their motor skills [9]. It is fun and a means of learning. Playing activities are inseparable from the children's world. Active play benefits children's development and maintains their health and fitness. Playing provides children with various knowledge and experiences essential for their growth and development. Children can have fun, make friends, explore their potential and learn new skills. Childhood is a period of development of motor ability and motor skills [20]. Integrating playing activities in the learning process also enhances cognitive, affective, and behavioral abilities [21]. Promoting active play in children's leisure time will increase physical activity contributing to physical and social development [22].

Play in children must contain elements that can stimulate the sensorimotor and social-emotional aspects. Children addicted to gadgets do not show the behavior that should appear when children play games. Gadget games cannot stimulate sensorimotor and social-emotional aspects in children. Children become less active and less able to express emotions and interact with peers. Additionally, playing with gadgets without parental supervision will make it difficult for children to stop playing and spend much time in front of gadgets [23], which causes children to become addicted to gadgets and makes children less likely to have social interactions. The role of parents in monitoring and supervising children is critical to minimize the impact of excessive use of gadgets on children.

According to the World Health Organization (WHO), children and adolescents can conduct physical activities such as playing, sports, recreation, physical education, or planned exercises in the family, school, and community environment. To improve cardiorespiratory and muscular fitness, bone health, cardiovascular and metabolic health, and reduce symptoms of anxiety and depression, the WHO recommends that children and adolescents aged 5-17 years engage in moderate to high-intensity physical activity for at least 60 min every day. Children and adolescents should do aerobic activities daily or at least three times a week to strengthen muscles and bones [24].

The use of technology among children is a predictor of physical inactivity. High-technology use was significantly associated with lower levels of physical activity [25]. Children tend to prefer to spend time and play with their gadgets. Reducing their active play will impact sedentary behavior and increase the risk of obesity in children [26]. Excessive gadget usage in children without parental supervision can have adverse effects. The risk of obesity in children is due to a lack of physical activity caused by spending much time playing online games on gadget screens [5].

Uncontrolled gadget usage in children leads to gadget addiction. The characteristics of children who are addicted to gadgets are children who always ask for additional time to play with gadgets. When they do not get what they want, they become aggressive and difficult to separate from their gadgets [27]. The use of gadgets by children mainly aims at playing online or video games. Many online or video games involve murder, rape, torture, and violence, impacting children's cognitive, social, and emotional development [27, 28]. Gadget addiction can lead children to spend much time in front of their gadget screens and always ask for additional time playing with their gadgets. These activities affect children's behavior, such as not being interested in playing with their friends, exercising, and communicating with other people.

Children need good physical activity to stimulate growth and development. Through playing, children can get enjoyment, make friends, learn new skills, and enrich their movements [13]. Playing traditional games is one form of physical activity that children can perform. In addition to benefits from physical activities, traditional games playing means participating in preserving them and national cultural values. However, excessive gadget usage leads children to prefer playing with their gadgets to traditional games.

Traditional games are one of the playing activities that can apply as learning resources helpful in developing the potential of children, such as cognitive, physical, motoric, language, social, and emotional abilities. Previous research revealed that traditional games are the right choice of activity for early childhood learning [29]. The reasons why traditional games are the right choice for children include: (1) children can play traditional games anywhere and with anyone, either at school or home with parents, (2) Most traditional games involve physical activity, require cooperation and intellectual involvement, (3) traditional games can provide fun for children that impact health and fitness, and (4) traditional games have positive values in the development responsibility, understanding and obeying the rules of the game, and respect each other.

Based on the data above, the decline in students' knowledge and the participation level of traditional games in Indonesia is one of the factors caused by excessive gadget usage (gadget addiction). Traditional games are a form of physical activity for children beneficial for growth and development. Traditional games can directly affect entire children's development, such as cognitive, movement, and social-emotional development [8]. Traditional games are more efficient for developing object control, basic locomotor skills, and improving motor fitness performance [14]. Additionally, most traditional games are cultural expressions of each region rich in human values

beneficial to life. However, when technology grew rapidly and widespread gadget usage, traditional games began gradually abandoned and endangered [12]. Children often play these games in their spare time, but online games are starting to abandon and replace them.

Based on our findings, a relationship exists between gadget addiction, students' knowledge, and participation level in traditional games. Gadget addiction significantly influences their knowledge and participation level in traditional games. Technology is developing rapidly and requires everyone to adapt to these developments. Technological developments and wide gadget usage threaten traditional games despite the benefit for children's development. Therefore, parents, physical education teachers, and education policymakers are critical in introducing and providing opportunities for children to participate in traditional games. Parents, physical education teachers, and policymakers have their respective roles in increasing children's knowledge and participation in traditional games. Parents can limit the use of gadgets in children by inviting children to implement physical activities such as playing traditional games. Physical education teachers can use traditional games in learning activities to warm up before core activities or as a means of recreation. Furthermore, policymakers can make a policy or rule for holding traditional game festivals on an ongoing basis so that the community can feel traditional games and the positive values contained therein. In essence, it is necessary to preserve traditional games considering their benefits for children's development and the national cultural heritage contained in them.

4. Conclusion

A significant relationship exists between gadget addiction, students' knowledge, and participation level in traditional games. Gadget addiction significantly influences the students' knowledge and participation level in traditional games. The findings in this study can provide an objective picture regarding the phenomenon of gadget use among students and its impact on the existence of traditional games. The study results illustrate that students who spend more time with gadgets and are addicted to gadgets do not have enough knowledge about traditional games and have a low level of participation in them, according to [29]. These games are one of the physical activities carried out in playing activities. The lack of physical activity in children will impact their growth, development, and health.

Technological developments have positive and negative impacts on human life. The number of types and gadgets users in daily activities makes gadgets popular in all circles, including children. Gadgets replace physical and playing activities for children with virtual activities, such as online games, that are more

interesting because they do not necessarily involve physical abilities and movement. Therefore, the socialization and promotion of traditional games' must always be carried out sustainably to preserve traditional games. This research is limited to only looking for the relationship between gadget addiction to the level of knowledge and student participation in traditional games. Further research is needed to discover gadget addiction and its impact on children in another aspect.

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