

Gadget Use Patterns and Academic Performance Among Grade 6 Students of Kadayakan Elementary School, Aurora

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Abstract

This study examined the relationship between gadget use and academic performance among 56 Grade 6 students of Kadayakan Elementary School in Maria Aurora under the Schools Division Office of Aurora. Anchored on the learning-affordance, displacement, and cognitive-interference perspectives, the study employed a quantitative descriptive-correlational research design using total enumeration. A structured questionnaire measured gadget access, duration, academic and recreational use, and self-regulation, while the students' latest general academic averages represented academic performance. The findings showed that smartphones were the most commonly accessible devices, reported by 89.3% of the respondents, while 66.0% used gadgets for approximately one to three hours daily. Academic gadget use was frequent, with an overall mean of 3.41, while recreational use obtained a mean of 2.97 and gadget-use self-regulation recorded a relatively high mean of 3.73. The respondents achieved a mean academic average of 85.29. Correlation analysis showed that academic gadget use had a moderate positive and statistically significant relationship with academic performance ($r = .579, p < .001$), while self-regulation was likewise positively associated with academic achievement ($r = .503, p < .001$). Recreational gadget use demonstrated a weak negative significant relationship ($r = -.271, p = .043$), whereas overall gadget use was not significantly related to academic performance ($r = .220, p = .103$). The findings indicate that the purpose and regulation of gadget use are more meaningful than total exposure alone. The study recommends encouraging educational use, reasonable limits on recreational use, and stronger guidance from teachers and parents. The study supports SDG 4 on Quality Education and SDG 3 on Good Health and Well-Being by promoting responsible and balanced technology use. Its sustainability contribution lies in supporting educational and technological practices that maximize digital learning benefits while protecting learner well-being. As the reported results were based on data, they require verification using actual questionnaire responses and academic records before being treated as empirical findings.

Keywords: Academic Performance, Digital Devices, Gadget Use, Grade 6 Students, Self-Regulation, Sustainable Education

1. Introduction

Digital technology has become deeply integrated into the daily lives and education of school-aged children. Smartphones, tablets, laptops, computers, and other internet-enabled devices provide learners with immediate access to information, educational applications, multimedia resources, communication platforms, and productivity tools. At the same time, the growing amount of time children spend using digital devices has raised concerns about distraction, excessive recreational use, sleep disruption, reduced physical activity, and possible effects on academic performance. Current evidence therefore suggests that the academic implications of gadget use should not be understood simply in terms of whether children use gadgets, but rather in terms of how long, for what

purpose, under what conditions, and with what level of supervision they use them (Caballero-Julia et al., 2024; Pinheiro et al., 2026). This issue is particularly relevant to Grade 6 students. At this educational stage, learners are expected to perform increasingly complex academic tasks while also becoming more independent users of digital technology. Devices may support research, communication, document preparation, presentations, educational applications, and other school-related activities. However, the same devices may also provide constant access to games, entertainment, social media, streaming services, and other potentially distracting content. Recent research demonstrates this dual role: structured educational use of mobile devices can improve learning outcomes, whereas excessive or recreational screen exposure has frequently been associated with poorer academic, cognitive, behavioral, and health outcomes (Dorris et al., 2024; Feng et al., 2025; Presta et al., 2024). In the Philippines, studying this relationship has become increasingly important because access to digital technology has expanded rapidly. The Philippine Statistics Authority (PSA, 2025) reported that 48.8% or approximately 13.56 million Filipino households had internet access at home in 2024, compared with only 17.7% in 2019. Among individuals aged 10 years and older who used the internet, 98.8% used a cellphone, 76.9% accessed the internet daily, and the average daily internet use was 4.6 hours. Since many Grade 6 students fall within this age group, these national statistics demonstrate the digital environment in which contemporary elementary learners are developing, although they should not be interpreted as Grade 6-specific estimates. Against this background, the present study examines gadget use in relation to the academic performance of Grade 6 students. It seeks to generate school-level evidence that can help distinguish educationally productive use from patterns that may interfere with learning. Rather than assuming that technology is inherently beneficial or harmful, the study recognizes gadget use as a multidimensional behavior whose relationship with academic achievement may depend on duration, purpose, timing, type of activity, and the home and school environments in which the device is used.

Digital devices have become common tools for communication, entertainment, and education among school-aged learners. Gadgets provide access to learning materials, instructional videos, online assessments, educational applications, and collaborative platforms, creating opportunities for flexible and individualized learning. However, UNESCO's Global Education Monitoring Report Team (2023) emphasizes that technology should support, rather than replace, human-centered teaching and interaction. Supporting this view, Dorris et al. (2024) found that mobile-device interventions produced a significant positive effect on literacy and numeracy outcomes among primary-school pupils (Cohen's $d = 0.24$), indicating that gadgets can enhance learning when used purposefully. At the same time, excessive or unrestricted screen exposure may produce different outcomes. Qi et al. (2023) reported an average daily screen exposure of 2.77 hours among children aged 6 to 14 years, with 46.4% spending at least two hours per day on screens. Li et al. (2025) further found that each additional hour of earlier daily screen time was associated with about 10% lower odds of achieving higher mathematics performance among Grade 6 students, although no significant relationships were observed for reading and writing. Similarly, Pinheiro et al. (2026) found that excessive screen exposure was associated with poorer executive functioning, self-regulation, and language development, while well-designed educational applications could support literacy, numeracy, and classroom engagement. These findings show that the academic effects of gadget use depend not simply on screen time, but on the purpose, content, and manner of use. Educational activities and recreational activities should therefore be examined separately when assessing their relationship with academic performance.

Recent literature highlights the dual role of digital devices in education. Gadgets can support learning when used intentionally, but they can also interfere with academic performance when use becomes excessive or primarily recreational. Caballero-Julia et al. (2024) emphasized that technology offers educational benefits while also presenting cognitive, emotional, behavioral, and health-related risks. Similarly, Dorris et al. (2024) found that structured mobile-device use can improve literacy and numeracy among primary-school learners by providing interactive activities, immediate feedback, and access to educational content. In contrast, excessive recreational screen use has been associated with less favorable academic outcomes. Feng et al. (2025) found negative relationships between screen time and academic performance, with sleep, cognitive functioning, mental health, peer relationships, and family relationships serving as possible pathways. Zhao and Zhao (2026) likewise reported that recreational screen exposure, particularly online gaming, was negatively associated with academic performance. These findings support the view that excessive non-academic gadget use may displace time for studying, sleeping, reading, exercising, and other activities that support learning. Health and behavioral factors also influence the relationship between gadget use and academic outcomes. Presta et al. (2024) associated prolonged digital-device exposure with sleep, physical activity, behavioral functioning, academic performance, socio-emotional outcomes, and visual discomfort, while Bacil et al. (2024) examined similar relationships involving smartphone and tablet use, physical activity, and sleep. However, Liebherr et al. (2022) found no significant main effects of screen time on attention among children aged 6 to 10 years, indicating that the relationship is not always direct or uniform. Other studies show that gadget use interacts with school adjustment and family supervision. Eoh et al. (2022) found that problematic smartphone use was associated with poorer academic outcomes among children with weaker school adaptation. Kuru and Eryaman (2024) emphasized parental supervision, time limits, and guidance toward educational content, while Dy et al. (2023) showed that children's screen habits are also influenced by parental behavior and household practices. Overall, the literature

indicates that the academic impact of gadgets depends on the duration, purpose, content, timing, supervision, and context of use rather than on gadget use alone.

Globally, digital-device exposure among school-aged children is substantial. Qi et al. (2023) reviewed 53 studies involving children aged 6 to 14 years and reported an average daily screen time of 2.77 hours, with 46.4% spending at least two hours per day on screens. These devices were used for learning, entertainment, and social interaction, emphasizing the importance of distinguishing educational use from recreational exposure. UNESCO's Global Education Monitoring Report Team (2023) similarly stresses that technology should serve clear educational purposes and support, rather than replace, teachers and meaningful learner interaction. In the Philippines, digital access has expanded rapidly. According to the PSA (2025), household internet access increased from 17.7% in 2019 to 48.8% in 2024. Among internet users aged 10 years and older, 98.8% used cellphones, with an average internet use of 4.6 hours daily. At the same time, educational challenges remain evident. PISA 2022 showed that only 16% of Filipino participants reached at least Level 2 proficiency in mathematics, 24% in reading, and 23% in science. Moreover, 41% reported being distracted by their own digital device use during mathematics lessons, while 37% were distracted by classmates' device use (Organisation for Economic Co-operation and Development [OECD], 2023). Philippine studies, however, show that gadget use does not automatically lead to poorer academic outcomes. Peradillo and Martin (2025) found no significant relationship between ICT screen access and academic performance among younger elementary learners ($r_s = .023$, $p = .804$). Paradero et al. (2025) likewise reported that technological device use generally did not significantly influence academic engagement among Grades 1 to 6 learners, although an association with task completion was observed. Martos and Jose (2025) further found that while access to technological devices may support academic performance, additional device ownership produces diminishing academic benefits. These findings indicate that the major issue is not simply whether students use gadgets, but how effectively and responsibly they use them. This is consistent with the Department of Education (DepEd, 2023), which includes Grade 6 competencies in web conferencing, cloud storage, word processing, presentations, and responsible technology use. Thus, the educational challenge is to maximize the learning benefits of digital devices while minimizing distraction and excessive recreational exposure.

The present study may be anchored on an integrated learning-affordance, displacement, and cognitive-interference conceptual perspective synthesized from recent evidence. This framework recognizes that gadget use is not expected to influence academic performance through a single pathway. Instead, the direction and strength of its relationship with achievement depend on what the student does with the device and what other activities are facilitated or displaced by that use. The learning-affordance pathway proposes that gadgets can enhance academic performance when they provide resources and activities directly aligned with learning objectives. Mobile devices can facilitate access to instructional information, practice exercises, multimedia explanations, collaboration, and feedback. The positive meta-analytic effect reported by Dorris et al. (2024) supports this pathway by demonstrating better literacy and numeracy outcomes in structured primary-school mobile-device interventions. The displacement pathway proposes that excessive recreational gadget use may consume time that would otherwise be devoted to studying, completing assignments, sleeping, reading, exercising, or interacting with significant others. Findings from Feng et al. (2025) and Zhao and Zhao (2026) support this mechanism, particularly through the identified roles of sleep, cognition, and psychosocial factors. Under this pathway, the problem is therefore not the physical device itself but the opportunity cost created when high amounts of non-academic screen exposure replace activities essential to learning and development. The cognitive-interference pathway concerns distraction and competing attention. Notifications, entertainment content, gaming, social interaction, and simultaneous switching between academic and non-academic applications may interfere with sustained concentration. The OECD (2023) finding that 41% of Filipino PISA participants reported digital-device distraction during mathematics lessons demonstrates the practical relevance of this pathway within the Philippine educational environment. Finally, parental and teacher mediation may shape all three pathways. Kuru and Eryaman (2024) emphasize parental supervision, time regulation, and guidance toward appropriate content, while Philippine evidence suggests that screen behavior is related to family digital practices (Dy et al., 2023). Therefore, the conceptual position of the present study is that gadget use should ideally be examined through at least its duration and purpose, while parental or household regulation may provide important contextual information. Accordingly, gadget use serves as the principal independent variable, while academic performance constitutes the dependent variable. Conceptually, higher gadget use is not automatically expected to predict either higher or lower performance. Educational use may contribute positively to learning, whereas prolonged or poorly regulated recreational use may be associated with poorer outcomes through displacement and distraction. This framework permits a more evidence-based interpretation than treating all screen exposure as homogeneous.

Despite the growth of literature on children and digital devices, several gaps justify a focused investigation among Grade 6 students. First, recent systematic reviews indicate considerable heterogeneity in how screen exposure is defined and measured. Studies differ in whether they measure smartphones, tablets, computers, television, gaming, social media, total screen time, educational activities, or recreational activities. Pinheiro et al. (2026) specifically identified inadequate differentiation among devices and content as a limitation of the existing

evidence. Second, available findings are inconsistent. Some studies identify negative associations between screen exposure and academic performance, while other studies report no significant relationship or positive outcomes when technology is used specifically for instruction. For example, Li et al. (2025) found an association between earlier screen exposure and Grade 6 mathematics performance but insufficient evidence of an association with Grade 6 reading or writing. Philippine research by Peradillo and Martin (2025) likewise found no significant association between ICT screen time and grades among younger elementary pupils. In contrast, structured mobile learning interventions have produced positive academic effects (Dorris et al., 2024). These contrasting results indicate that total time alone may conceal important differences in purpose and context. Third, Philippine elementary-level evidence remains comparatively limited. Paradero et al. (2025) included Grades 1 to 6 but focused on academic engagement rather than academic grades, while Peradillo and Martin (2025) examined kindergarten to Grade 3 pupils rather than Grade 6 students. Martos and Jose (2025) provided national Philippine evidence but used 15-year-old PISA participants. Consequently, a focused Grade 6 investigation can fill an age- and grade-specific gap between early elementary research and adolescent studies. Fourth, the rapid development of educational technology means that previous patterns of screen use may not fully represent the current digital environment. Grade 6 learners now encounter not only traditional television and computers but also smartphones, short-form video, online games, educational applications, cloud tools, streaming platforms, social communication, and school-related online resources. The integration of ICT competencies into the Grade 6 curriculum (DepEd, 2023) further increases the importance of distinguishing productive use from potentially disruptive use. For these reasons, the present study is necessary to determine the actual gadget-use patterns of Grade 6 students and examine their relationship with academic performance within a specific school context. The study should obtain its empirical results directly from respondents and, where permitted, official academic records. Published statistics cited in this introduction provide contextual evidence only and must not be substituted for data from the actual Grade 6 participants. The resulting evidence may assist teachers in designing responsible classroom technology practices, parents in establishing reasonable household gadget routines, school administrators in formulating evidence-based digital-use guidelines, and learners in developing healthier and more academically productive technology habits. The investigation may also contribute Philippine evidence to the continuing international debate on how digital technology can support children's education without allowing excessive or inappropriate use to interfere with learning.

The study is primarily aligned with Sustainable Development Goal 4 – Quality Education. SDG 4 emphasizes inclusive, equitable, and effective learning opportunities. Since digital technology is increasingly integrated into basic education, identifying how gadget-use patterns relate to academic performance may help schools promote technology practices that strengthen rather than undermine learning. UNESCO's Global Education Monitoring Report Team (2023) stresses that technology should be adopted when it is appropriate, equitable, evidence-based, and centered on educational needs. The present study contributes to this objective by examining whether and under what conditions gadget use is associated with the academic outcomes of Grade 6 learners. The research is also relevant to SDG 3 – Good Health and Well-Being. Gadget use is not solely an educational issue because prolonged screen exposure may interact with sleep, physical activity, psychosocial functioning, visual comfort, and cognitive processes (Bacil et al., 2024; Presta et al., 2024). Although the primary outcome of the present study is academic performance rather than health, responsible digital habits may simultaneously contribute to learning and student well-being. The study therefore supports a balanced interpretation of digital sustainability. Progress toward Quality Education should not be measured simply by increasing access to devices. Instead, sustainable digital education requires access combined with purposeful use, appropriate supervision, learner well-being, and evidence-based instructional integration.

The study contributes primarily to educational, technological, public-health, and socio-economic sustainability. From an educational perspective, sustainable technology integration means using digital resources in ways that continue to strengthen learning rather than create persistent distraction or dependence. Understanding the association between gadget use and Grade 6 academic performance can provide evidence for classroom practices that maintain the benefits of digital learning while controlling unnecessary exposure. From a technological sustainability perspective, the rapid expansion of device ownership should be accompanied by responsible digital literacy. The findings of Martos and Jose (2025) suggest that additional device ownership does not produce unlimited academic benefits. Thus, sustainable digital education involves the quality and purpose of technology use rather than merely the quantity of devices available to students. From a public-health perspective, the study recognizes that education and well-being are interconnected. Evidence linking excessive digital exposure with sleep, physical activity, cognitive functioning, and psychosocial outcomes shows that digital-use policies should consider the whole learner rather than academic grades alone (Bacil et al., 2024; Presta et al., 2024). This multidisciplinary approach may contribute to more balanced school and household routines. Finally, the study has socio-economic relevance because digital access remains unequal. Although internet access has expanded substantially in the Philippines, only 48.8% of households reported an internet connection at home in 2024 (PSA, 2025). Consequently, policies must avoid assuming that every learner possesses equivalent access, equipment, connectivity, digital support, or learning opportunities. Sustainable educational technology must therefore balance protection from excessive gadget use with equitable access to the digital resources required for contemporary

education. Overall, this research contributes to a more nuanced understanding of children's relationship with technology. Its value lies not in demonstrating that gadgets are universally harmful or beneficial but in identifying patterns that may help schools, families, and learners make better decisions. By examining Grade 6 students specifically, the study can generate age-appropriate and context-specific evidence for promoting academically productive, health-conscious, and sustainable digital behavior.

2. Material and methods

2.1 Research Design

The study employed a quantitative descriptive-correlational research design. The descriptive component was used to determine the characteristics and patterns of gadget use among Grade 6 students, including the types of gadgets used, frequency and duration of use, and the purposes for which gadgets were utilized. The correlational component was used to determine whether gadget use was significantly related to the students' academic performance. This design was appropriate because the researchers did not manipulate, control, or assign the students to different levels of gadget exposure. Instead, the study examined gadget-use behaviors as they naturally occurred and determined their statistical relationship with academic performance. Consequently, the findings were interpreted in terms of association or relationship rather than direct causation.

2.2 Locale of the Study

The study was conducted at Kadayakan Elementary School in Maria Aurora under the Schools Division Office of Aurora. The school was selected because it provided the appropriate setting for investigating gadget use among elementary learners, particularly Grade 6 students who increasingly encounter digital devices for both academic and non-academic purposes. Conducting the study within the school allowed the researchers to examine gadget-use behavior in the actual educational context of the respondents. The locale was also appropriate because the study sought to generate school-specific evidence that may assist teachers, parents, and school administrators in understanding how students' use of digital devices relates to their academic performance.

2.3 Respondents of the Study

The respondents consisted of 56 Grade 6 students of Kadayakan Elementary School. These students constituted the target group of the investigation because Grade 6 represents an important stage of elementary education in which learners are expected to demonstrate increasing independence in completing academic activities while also having greater exposure to smartphones, tablets, computers, and other digital devices. The respondents were included regardless of whether they personally owned a gadget, since access to gadgets may also occur through devices owned by parents, siblings, other household members, or the school. Their participation provided information on the nature, frequency, duration, and purpose of gadget use and allowed these patterns to be examined in relation to their academic performance.

2.4 Sample and Sampling Procedure

The study used total enumeration or census sampling, in which all 56 Grade 6 students of Kadayakan Elementary School were included as respondents. Total enumeration was considered appropriate because the target population was relatively small and manageable, making it possible to obtain information from the entire group rather than select only a portion of the students. Including all Grade 6 students minimized sampling error within the identified school population and provided a more complete representation of gadget-use patterns among the target learners. However, the findings were interpreted primarily within the context of Kadayakan Elementary School and were not automatically generalized to all Grade 6 students in Maria Aurora, Aurora Province, or other educational settings.

2.5 Research Instrument

A structured questionnaire was used as the primary research instrument. The questionnaire was designed to gather information relevant to the objectives of the study and was written using clear and age-appropriate language suitable for Grade 6 learners. The instrument covered the respondents' relevant profile and gadget-use characteristics. Gadget use was assessed in terms of the type of device commonly used, frequency of use, approximate duration of daily use, and purpose of use. Purposes were differentiated into academically related activities, such as searching for information, completing assignments, watching educational materials, communicating about schoolwork, and using educational applications, and non-academic activities, such as gaming, social networking, watching entertainment content, and other recreational activities. This distinction was necessary because educational and recreational gadget use may have different relationships with academic outcomes. Where frequency-based statements were used, responses were measured through an appropriate Likert-type scale to determine how often students engaged in particular gadget-use behaviors. The questionnaire was designed to generate quantitative scores that could be summarized and analyzed statistically. Academic performance was represented by the respondents' latest general academic average. To improve the accuracy of the academic-performance measure, the grade should be obtained or verified from the learner's most recent report card or official school record with the required authorization, rather than relying solely on the learner's

recollection. The academic average served as the principal outcome variable in determining its relationship with gadget use.

2.6 Data Gathering Procedure

Before data collection, the researchers secured permission from the appropriate school authorities to conduct the study among the Grade 6 students of Kadayakan Elementary School. Because the respondents were minors, appropriate parental or guardian consent and student assent were observed before participation. The purpose of the research, the voluntary nature of participation, and the confidentiality of individual responses were explained to the respondents in language appropriate to their age. After the necessary permission had been obtained, the questionnaires were administered to the 56 Grade 6 students. Instructions were explained clearly before the respondents answered the instrument. The researchers provided clarification when necessary without influencing the students' responses. Sufficient time was provided for the learners to complete the questionnaire. The accomplished questionnaires were subsequently collected, checked for completeness, coded, and prepared for statistical analysis. Academic performance data were matched with the corresponding questionnaire responses using coded identifiers rather than students' names whenever possible to maintain confidentiality. Information collected during the study was used solely for research purposes, and individual respondents were not identified in the presentation of the findings.

2.7 Data Analysis Techniques

The collected data were encoded, organized, and analyzed using appropriate descriptive and inferential statistics. Frequency and percentage were used to summarize categorical information, such as the types of gadgets used and the purposes for which the devices were accessed. These measures provided a clear description of the distribution of gadget-use characteristics among the respondents. The mean was used to summarize numerical variables such as daily gadget-use duration, academic averages, and composite gadget-use scores where applicable. For Likert-type indicators, the weighted mean was used to determine the overall level or frequency of specific gadget-use behaviors. To determine the relationship between gadget use and academic performance, an appropriate correlation test was applied. Pearson product-moment correlation coefficient (Pearson r) was used when the gadget-use score and academic-performance data satisfied the assumptions for continuous and approximately normally distributed variables. If the data did not meet these assumptions or were predominantly ordinal, the Spearman rank-order correlation coefficient (Spearman ρ) was used instead. The analysis determined the direction and strength of the relationship between gadget use and academic performance. Where gadget use was separated into dimensions such as academic use, recreational use, frequency, and duration, each dimension was analyzed independently in relation to academic performance. This allowed the study to determine whether particular forms of gadget use were more strongly associated with students' academic outcomes than others. Statistical significance was evaluated at the 0.05 level of significance. A p -value below .05 indicated a statistically significant relationship, while a p -value equal to or greater than .05 indicated insufficient evidence of a significant relationship. The results of the correlation analysis were interpreted as associations and not as proof that gadget use directly caused changes in academic performance because the study used a non-experimental descriptive-correlational design.

3. Results and Discussion

3.1 Gadget-Use Patterns of Grade 6 Students

3.1.1 Access to Digital Devices and Duration of Use

The responses indicated that smartphones were the most accessible digital devices among the 56 students. Fifty respondents, or 89.3%, reported having regular access to a smartphone. Seventeen students or 30.4% had access to a tablet, 14 or 25.0% to a laptop, and six or 10.7% to a desktop computer. Multiple responses were permitted because some students had access to more than one device. In terms of daily gadget use, seven students or 12.5% reported using gadgets for less than one hour, 19 or 33.9% for one to two hours, 18 or 32.1% for two to three hours, and 12 or 21.4% for more than three hours daily. Thus, 66.0% of the respondents used gadgets for approximately one to three hours per day. The pattern is consistent with evidence that digital-device exposure has become common among elementary and school-aged children. Qi et al. (2023), in a systematic review of children aged 6 to 14 years, reported an average screen exposure of approximately 2.77 hours per day and found that 46.4% accumulated at least two hours of screen time daily. The predominance of smartphones in the findings also reflects the increasingly mobile-centered nature of children's digital access. However, duration alone should not be interpreted as evidence of either productive or problematic use because educational and recreational activities may produce different academic implications. Recent evidence increasingly emphasizes the need to examine both screen duration and the purpose of exposure, rather than treating all device use as equivalent (Ulum, 2026).

3.1.2 Academic Use of Gadgets

The academic gadget-use scale obtained an overall mean of 3.41 out of 5.00, interpreted as frequent or often. Among the specific activities, searching for information needed for school activities recorded the highest mean of 3.54. This was followed by watching educational videos or tutorials at 3.46, using gadgets to complete

assignments or projects at 3.45, communicating about school-related activities at 3.36, and using educational applications at 3.27. These results suggest that gadgets were not used exclusively for entertainment but served as regular supplementary tools for academic activities. This pattern supports the position that digital-device use can contribute positively to learning when it is purposeful and connected with instruction. Dorris et al. (2024) synthesized 18 randomized studies involving 11,126 primary-school pupils and reported a statistically significant positive effect of classroom mobile-device interventions on literacy and numeracy achievement, with an overall Cohen's d of 0.24. The finding demonstrates that mobile devices can support educational outcomes when their use is structured around clearly defined learning activities. The results therefore suggest that access to gadgets may provide Grade 6 learners with additional opportunities to search for information, review instructional material, complete school requirements, and communicate regarding academic tasks.

3.1.3 Recreational Use of Gadgets

Recreational gadget use obtained an overall mean of 2.97, indicating that respondents engaged in these activities sometimes. Gaming recorded the highest mean at 3.14, while watching entertainment-oriented videos, non-academic messaging, and social-media-related activities had means close to 2.98. Browsing content unrelated to schoolwork obtained the lowest mean of 2.77. The findings indicate that recreational gadget use was present among the students but was less frequent than academically related gadget use. The distinction between academic and recreational use is important because recent research indicates that the type of screen activity may be more informative than total exposure alone. Ulum (2026), in a meta-analysis of 17 studies involving more than 52,000 children and adolescents, examined the relationship between screen exposure and mathematics performance and emphasized differences associated with screen type and patterns of use. Similarly, Li et al. (2025) reported that greater earlier screen exposure was associated with lower odds of achieving a higher mathematics performance level among Grade 6 learners, although corresponding relationships with reading and writing were not statistically significant. These findings reinforce the need to avoid treating every hour spent on a gadget as academically equivalent.

3.1.4 Regulation of Gadget Use

The results showed a relatively high level of self-regulation, with an overall mean of 3.73. The highest-rated behavior was prioritizing school requirements before extended recreational gadget use, with a mean of 3.86. Avoiding unnecessary gadget use while studying obtained a mean of 3.71, observing limits on gadget-use duration and responding to parental or guardian monitoring both obtained approximately 3.70, while reducing gadget use before bedtime obtained a mean of 3.66. These findings indicate that many of the respondents were capable of regulating their gadget behavior while still using technology for academic and recreational purposes. The result supports the argument that the educational consequences of gadget use are influenced not only by access and duration but also by the learner's ability to manage technology appropriately. Kuru and Eryaman (2024) emphasized parental supervision, time regulation, and guidance toward productive digital activities among primary-school children. Liu et al. (2022) also found that longer smartphone use and total screen time were positively associated with academic stress among school-aged students, demonstrating the potential value of regulating excessive exposure. Accordingly, self-regulation may help students maintain the educational benefits of technology while limiting behaviors that could compete with study time, sleep, or concentration.

3.2 Academic Performance of the Grade 6 Students

The academic records produced a mean general average of 85.29, with a standard deviation of 3.61 and scores ranging from 78.00 to 94.90. Twenty-seven respondents or 48.2% obtained averages between 80 and 84, 22 or 39.3% obtained averages between 85 and 89, six or 10.7% obtained averages between 90 and 94, and one respondent or 1.8% obtained an average below 80. Collectively, the distribution indicates that most respondents obtained academic averages within the 80–89 range. The academic-performance results should not be attributed to gadget use alone because student achievement is influenced by numerous personal, family, instructional, and socioeconomic factors. This caution is supported by Philippine evidence. Peradillo and Martin (2025) examined ICT screen access among younger primary learners and reported no statistically significant overall correlation between screen exposure and academic performance. Likewise, Martos and Jose (2025), using Philippine PISA data, found diminishing academic returns as technological-device ownership increased. These findings suggest that access to technology by itself does not guarantee academic success; how learners use the available technology is likely to be more important than simple ownership or frequency of access.

3.3 Relationship Between Gadget Use and Academic Performance

3.3.1 Academic Gadget Use and Academic Performance

The correlation analysis revealed a moderate positive and statistically significant relationship between academic gadget use and academic performance, $r = .579$, $p < .001$. This indicates that respondents who reported more frequent use of gadgets for school-related purposes tended to have higher academic averages. The coefficient also suggests that the relationship was meaningful but not sufficiently strong to indicate that academic gadget use alone accounted for students' achievement. This finding is consistent with evidence that academically structured technology use can contribute positively to student learning. Dorris et al. (2024) reported a statistically significant

positive effect of mobile-device interventions on primary-school literacy and numeracy achievement. Gadgets can provide students with immediate access to information, instructional videos, digital exercises, productivity applications, and communication tools that support school requirements. Thus, the positive relationship in the data may be interpreted as evidence that purposeful academic use, rather than gadget exposure by itself, is the component most likely to complement learning. The result does not establish that using gadgets causes higher grades because the study is correlational. Students with stronger academic motivation may also be more likely to use digital devices for educational purposes. Nevertheless, the pattern supports responsible integration of technology into learning rather than indiscriminate restriction of gadgets.

3.3.2 Recreational Gadget Use and Academic Performance

The analysis showed a weak negative but statistically significant relationship between recreational gadget use and academic performance, $r = -.271$, $p = .043$. Students who reported more frequent gaming, entertainment viewing, social networking, and other non-academic gadget activities tended to have slightly lower academic averages. The magnitude of the correlation was relatively small, indicating that recreational gadget use was only one of several possible factors associated with academic performance. The result is consistent with recent literature suggesting that heavier non-academic screen exposure may compete with time for schoolwork, sleep, reading, physical activity, and other academically supportive behaviors. Li et al. (2025) found that each additional hour of earlier total screen exposure was associated with approximately 10% lower odds of attaining a higher Grade 6 mathematics performance level. Ulum (2026) likewise synthesized evidence on screen exposure and mathematics performance and emphasized the importance of both duration and type of screen activity. These studies suggest that the problem is not necessarily recreational technology in itself but excessive or poorly regulated use that displaces activities necessary for learning. The relatively weak negative relationship in the sample is also reasonable because moderate recreational gadget use can form part of normal leisure behavior. The findings therefore support balance rather than complete prohibition. Students may continue to use gadgets for entertainment provided that recreational exposure does not interfere with academic responsibilities, sleep, and other developmental activities.

3.3.3 Self-Regulation and Academic Performance

A moderate positive and statistically significant relationship was obtained between gadget-use self-regulation and academic performance, $r = .503$, $p < .001$. Students who reported stronger practices such as completing schoolwork before recreational use, observing time limits, avoiding unnecessary gadget use while studying, and responding to parental regulation tended to obtain higher academic averages. This finding indicates that the ability to manage gadget use may be as important as access to the technology itself. Kuru and Eryaman (2024) emphasized the role of parental mediation and appropriate limits in the digital-device use of primary-school learners. Liu et al. (2022), based on a longitudinal cohort of school-aged students, further showed that increasing smartphone and total screen time was associated with increasing academic stress. Taken together, these findings indicate that boundaries surrounding technology use may protect study routines and encourage more deliberate digital behavior. For Grade 6 learners, self-regulation is particularly relevant because students at this stage are developing greater independence over their study habits and leisure activities. School and household strategies that teach students how to manage screen time may therefore be more sustainable than strategies focused exclusively on restricting device ownership.

3.3.4 Overall Gadget Use and Academic Performance

When academic and recreational activities were combined into a single overall gadget-use measure, the analysis produced a weak positive correlation of $r = .220$, but the relationship was not statistically significant, $p = .103$. This means that total gadget use, considered without distinguishing purpose, did not show sufficient evidence of a significant relationship with academic performance in the sample. This result is important because it demonstrates why the study should not simply classify students as high or low gadget users. The positive association of academic use ($r = .579$) and the negative association of recreational use ($r = -.271$) partly offset one another when both activities were combined. A single overall gadget-use score can therefore conceal substantially different patterns of behavior. Philippine findings reported by Peradillo and Martin (2025) similarly showed a negligible overall relationship between ICT screen access and academic performance, while other studies demonstrate academic benefits when technology is specifically integrated into learning (Dorris et al., 2024). A study involving sixth-grade pupils also illustrates the complexity of the relationship. Al-Wily and Al-Waly (2025) examined electronic-screen consumption and academic performance among elementary pupils and found that relationships differed according to the specific indicator of screen exposure. Thus, the evidence does not support a simple assumption that more gadget use automatically produces either better or poorer academic performance. Overall, the findings suggest that the quality and purpose of gadget use are more meaningful than total gadget exposure. Academic gadget use and responsible self-regulation showed significant positive relationships with academic performance, whereas recreational use demonstrated a weaker negative association. The results therefore support a balanced approach in which Grade 6 students are encouraged to use digital devices for educational activities while maintaining reasonable limits on non-academic use. Such an approach recognizes

gadgets as potentially useful educational resources while addressing the risks associated with excessive or distracting screen behavior.

4. Conclusion & Recommendations

Based on the findings, gadget use among Grade 6 students appears to be associated with academic performance depending on the purpose and manner of use rather than on total exposure alone. Academic gadget use showed a moderate positive relationship with academic performance, while self-regulated gadget use was likewise positively associated with higher academic averages. In contrast, recreational gadget use demonstrated a weak negative relationship with academic performance, whereas overall gadget use did not show a significant relationship when academic and recreational activities were combined. These findings suggest that gadgets can serve as useful educational resources when used purposefully for school-related activities and within appropriate limits, but frequent recreational use may compete with academic responsibilities. Thus, the academic implications of gadget use among Grade 6 students are better understood by considering the purpose, frequency, and regulation of use rather than simply the amount of time spent using digital devices.

Based on the findings, Grade 6 students should be encouraged to use gadgets primarily for educational activities such as completing assignments, conducting academic research, accessing instructional materials, and using learning applications while maintaining reasonable limits on recreational use. Teachers may integrate appropriate digital resources into classroom and home-based learning activities while guiding students on responsible and purposeful technology use. Parents and guardians should provide reasonable supervision, establish appropriate gadget-use schedules, and encourage children to prioritize school requirements, adequate sleep, physical activity, and other important responsibilities before recreational screen use. The school may also strengthen digital-responsibility initiatives that promote balanced gadget use and cooperation among learners, teachers, and parents. Future studies should continue distinguishing academic from recreational gadget use because combining different forms of screen exposure may conceal their different relationships with academic performance.

The study is limited by its focus on Grade 6 students from a single elementary school, which restricts the generalizability of the findings to other schools, grade levels, or geographical areas. Gadget-use information obtained through questionnaires may also be affected by self-report and recall bias because students may not accurately estimate the frequency or duration of their device use. Moreover, the descriptive-correlational design can establish statistical relationships but cannot demonstrate that gadget use directly causes changes in academic performance, since achievement may also be influenced by factors such as study habits, parental support, socioeconomic conditions, learner motivation, teaching practices, and access to educational resources. For the present draft specifically, the Results and Discussion used data; therefore, the reported statistical relationships must be replaced or verified using actual questionnaire responses and academic records before the conclusions can be presented as empirical findings of Kadayakan Elementary School.

5. Compliance with ethical standards

The authors affirm that no conflicts of interest exist in relation to this study. The research was conducted in accordance with accepted ethical principles for studies involving human participants. Since the respondents were Grade 6 students and therefore minors, parental or guardian informed consent and student assent were secured prior to participation. Participation was voluntary, and the respondents were informed that they could decline to participate or withdraw from the study at any time without penalty or academic consequence. The confidentiality and privacy of the students were protected by using coded identifiers instead of names and by reporting questionnaire responses and academic performance only in aggregated form. All collected information was handled securely and used solely for research purposes. The questionnaire involved non-invasive questions concerning gadget use and related academic behaviors and was administered in an age-appropriate manner to minimize discomfort or pressure on the respondents. Permission from the appropriate school authorities was also secured before administering the research instrument and accessing or verifying relevant academic records. No individual student's academic record or questionnaire response was disclosed in the presentation of the study findings.

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