



## The Effectiveness of Using Gadgets on Students' Learning Interests and Academic Performance

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**Abstract:** This quantitative study contributes to the literature by focusing on the increasing prevalence of technology in everyday life and the growing use of gadgets in educational settings. It aimed to evaluate the impact of gadgets on the student's academic performance at Paly National High School in Taytay, Palawan. A survey was conducted among 145 students from grade 7 to grade 10 who were chosen to participate in this study through stratified random sampling. The data was analyzed using SPSS software, and inferential statistics, correlation, and independent t-tests were used to identify relationships between academic performance and gadget use. Descriptive statistics were used to interpret the quantitative data on students' perceptions of gadget use and its impact on academic performance. The study revealed no significant difference in the mean scores among respondents with different gadgets, including desktops, laptops, mobile phones, and iPads. Similarly, findings also implied that specific purposes for which respondents used gadgets did not influence their academic performance. However, most of the respondents overwhelmingly disagree that gadget use has detrimental effects, indicating that the beneficial influence of gadgets on academic achievement outweighs potential drawbacks. Educators may explore ways to integrate technology into the curriculum effectively.

## INTRODUCTION

One of the innovations in the world of education is the use of technology tools such as gadgets. Children use gadgets consistently in their everyday activities, which provides an opportunity for research to enhance scientific literacy regarding gadget usage. Rohman (2017) defined a gadget as a mechanical device or tool that provides many new pleasures for its users, even though it may not be practical in its use. Additionally, Lake and Chusnatayaini (2023) emphasized that gadgets are helpful for new tasks, which have positive benefits as a means or practical means of communication or what is known as a mobile phone. Gadgets make it easier for students to access data for learning. It significantly impacts the value of life, especially when someone spends time using gadgets. Iswidharmanjaya (2014) suggests that using gadgets to enhance academic performance and alleviate learning boredom can have a positive impact. On the other hand, excessive use of gadgets may adversely affect physical and psychological health (Sudiyono & Astuti,

2021). It also tends to make students lazy to carry out their activities, including when studying, increasing diseases, namely eating irregularly, damaging eyes, and causing social separation where students become individuals and lack interaction with others. Suwarsi (2016) states several negative impacts on students, namely, low reading interest because they are more interested in learning with motion and pictorial media and learning and playing activities make them have an individualistic attitude or prefer to be alone. Many students play with gadgets instead of playing with their friends. Ineffective use of gadgets increases dependency and diminishes students' memory and focus during learning. Learning to socialize with friends is very important to understand a rule that must be used by oneself or even the custom of being a good friend. However, the fact is that students prefer to spend their time playing with gadgets. Children become addicted to gadgets, so they forget to socialize with the surrounding environment, which will impact children's psychology, especially the emergence of a low self-confidence crisis (Caasi & Pentang, 2022; Sudiyono & Astuti, 2021).

Incorporating gadgets in school learning significantly contributes as a learning resource and facilitates a comfortable learning process. This fosters an effective and efficient learning environment, ultimately enhancing students' learning outcomes (Ratnasari & Haryanto, 2019). Many contemporary university students are technically and psychologically prepared to incorporate gadgets, like mobile technologies, into their education (Sattarov & Khaitova, 2019). This readiness leads to generally positive student attitudes and perceptions (Krasulia, 2018), ultimately contributing to enhanced student performance. This supports the assertion of the efficiency of using gadgets in teaching and learning. Furthermore, a statistically significant relationship exists between gadgets used for learning and academic performance (Amponsah, et al., 2017). This is despite the challenges that the students experience while using the gadgets.

Integrating electronic gadgets into modern education is undeniable; however, their pervasive use among students has a significant drawback, as research indicates a negative impact on academic performance, characterized by distractions and potential procrastination (Esther, 2012). Despite concerns, divergent findings exist, with studies like Sudiyono and Astuti (2021) suggesting that gadget use and the learning environment may not substantially influence students' interest in learning. Challenging the assumption of a uniform correlation between increased gadget usage and diminished academic performance, observed that more time spent on mobile devices did not necessarily translate to better academic outcomes. These discrepancies underscore the need for a nuanced understanding of the relationship between gadget usage and academic performance, considering factors such as learning environments and individual differences. Educators and parents are urged to adopt a comprehensive approach that encourages responsible gadget use (Caasi & Pentang, 2022) while acknowledging the multifaceted nature of this issue and striving for a balanced perspective that considers both the potential drawbacks and benefits of technology integration in learning environments (Pentang, 2021).

Philippine education is adopting technology tools such as gadgets for teaching and learning; however, there is still a long way to go before the education sector can successfully integrate technology into academic delivery effectively. Emerging mobile

pedagogy makes gadgets a potentially beneficial tool for learning. Many studies have explored the effectiveness of using gadgets in education (Victoria, 2021; Muhammad et al., 2020; Noratikah, 2020; Nur, 2019; Borisovaa et al., 2016). However, there has been relatively little research on learning the effects of gadgets at the secondary level of education, especially in remote places like the Province of Palawan. The increasing prevalence of technology in everyday life and the growing use of gadgets in educational settings underscore the need to explore new possibilities for optimizing their potential more efficiently. With this, the study described students' academic performance at Paly National High School and how they use their gadgets. Also, it determined if there is a significant relationship between gadgets used for students' learning and academic performance. Furthermore, it identified how students perceive the use of gadgets, its impact on academic performance, and what challenges students face when integrating gadgets into the learning environment.

## **METHOD**

This study utilized a descriptive correlational design. The purpose of this descriptive correlational study was to examine the effectiveness of the utilization of gadgets on the academic performance of students. Descriptive correlational design was used in research studies that provide static pictures of situations and establish the relationship between different variables (McBurney & White, 2009). The design was appropriate for the topic above because in conducting the study, the researchers aimed to describe the relationship between the variables without manipulating them. The researchers collected quantitative data on students' perceptions of gadget use and its impact on their learning to provide a comprehensive analysis of the impact of the utilization of electronic devices such as smartphones, tablets, laptops, and other gadgets on students' learning interest and academic performance of the students in Paly National High School (PNHS) in the Municipality of Taytay, Palawan. Since there was no reliable database on gadgets used and academic performance in PNHS, the study proceeded with a survey conducted among 145 students from grade 7 to grade 10 to examine students' utilization of gadgets and their effect on their academic performance. To achieve the study's objective, the Mean Percentage Score of the sampled students for the school year 2023-2024 was obtained from their teachers. Subsequently, a survey was conducted to collect data on their utilization of gadgets and the subsequent impact on academic performance.

The participants were the students enrolled at Paly National High School, located in Taytay, Palawan, Philippines. A stratified random sampling technique was used to ensure representation from various educational levels and subject areas (Iliyasu & Etikan, 2021). One hundred forty-five students from grade 7 to grade 10 were the participants in the survey with the following distribution: 39 students from grade 7, 33 students from grade 8, 43 students from grade 9, and 30 students from grade 10. They were selected to ensure that the sample is representative of the different grade levels and characteristics, which can lead to more accurate and reliable results when making inferences about the entire population. Students' participation in this study was voluntary. The researchers provided informed consent to the participants. Before data collection began, ethical considerations

were in place to protect all participants. The researcher ensured the confidentiality of the participants as well as the protection of their identity by tagging them as P1 or Participant 1. Student participants were given survey questionnaires to collect quantitative data on their perceptions, experiences, and attitudes regarding using gadgets in learning. The researcher adapted the survey questionnaire from the study of Garcia et al. (2022) on the Influence of Gadget Dependency on the Academic Procrastination Levels of Grade 12 Students using a Likert scale. This data collection method helps the researchers acquire facts or information about the subject or object of research through data-gathering instruments like questionnaires.

Mean Percentage Score was used as the student's academic performance data. This is the average of all the grades that the students received in all their subjects throughout the school year (DepEd, 2008). Its utilization is due to the absence of a widespread agreement on a standard definition or set of indicators for academic performance (Nketiah-Amponsah et al., 2017). Table 1 shows the description of the grading scale from DepEd Form 138-E.

**Table 1.** Grading Scale From DepEd Form 138-E

Grading Scale	Description	Remarks
90-100	Outstanding	Passed
85-89	Very Satisfactory	Passed
80-84	Satisfactory	Passed
75-79	Fairly Satisfactory	Passed
Below 75	Did not Meet Expectations	Failed

The study distributed a survey questionnaire to gather information on gadget uptake and usage from the sampled students. The survey included information on the gadgets used by the students for learning and where they use them. The numerical data was analyzed and processed through the SPSS software. For inferential statistics, correlation and independent t-tests were used to identify the relationship between academic performance and gadget use. This is because the t-test is able to provide a more specific picture. After all, a precise comparison is supplied so that the variables being compared will be able to show differences in results according to the treatment given. Differences in learning outcomes resulting from differences in treatment given can provide a further understanding that the resulting differences will later show the influence of the treatment given. The quantitative data on the perception of students on the gadget used and its impact on academic performance was analyzed and interpreted using descriptive statistics. A 4-point scale is used to describe the students' perception of gadgets. Table 2 presents the independent variable's numerical scale, statistical limit, and interpretation.

**Table 2.** Scaling and Quantification

Numerical Scale	Statistical Limit	Interpretation
1	1.00-1.75	Strongly Agree
2	1.76-2.50	Agree
3	2.51- 3.25	Disagree
4	3.26-4.00	Strongly Disagree

## RESULT AND DISCUSSION

### *Academic Performance of the Students*

The tables below display the summary statistics for the utilized variables, the academic performance of the student respondents (Table 3). The Mean Percentage Score ranges from a minimum of 78 to a maximum of 93. The academic performance for the entire respondents was 86.9861 (SD = 3.41155). The data shows that the academic performance of the respondents who use gadgets in learning is satisfactory.

**Table 3.** Academic Performance of The Respondents (n=145)

Variable	Mean	SD	Minimum	Maximum	Interpretation
MPS	86.9861	3.41155	78	93	Satisfactory

### *Students' Gadget Utilization in Learning*

Table 4 further illustrates that most respondents use mobile phones (89.7%) for academic purposes. Following this group are respondents who own desktops and laptops (4.1%), with the lowest percentage belonging to those who own iPads (2.1%). The majority of the respondents use their gadgets for assignments (28.3%), to access social media (25.5%), and for gaming (21.4%) compared to those who use them for entertainment (18.6%), sending emails (4.1%) and least is for the (electronic) journal. This conforms to Rumapea (2020), who states that students use gadgets for communication, accessing social media, playing games, accessing various applications, and for activities such as watching videos on YouTube, listening to music, uploading pictures, and making captions on Instagram, and adding vocabulary by reading captions on someone's post (Lutfiani, 2018). Therefore, data reveals that most respondents possess mobile phones, and a notable portion utilize them for academic purposes. Ownership of desktops and laptops is the next highest, while those with iPads constitute the smallest percentage. In terms of usage, most employ their gadgets for assignments, followed by accessing social media and gaming. Comparatively fewer respondents use gadgets for entertainment sending emails, and the least common use is for (electronic) journal purposes.

**Table 4.** Gadget and Its Uses (n=145).

Variable	Frequency	Percentage
Gadgets Owned		
Desktop	6	4.1%
Laptop	6	4.1%
Mobile Phone	130	89.7%
Ipad	3	2.1%
Use of gadget		
For assignment	41	28.3%
Email	6	4.1%
Journal	3	2.1%
Social Media	37	25.5%
Games	31	21.4%
Entertainment	27	18.6%

### *Relationship between Gadgets and Academic Performance*

As indicated in Table 5, the mean score of the respondents with desktop was 85.500 (SD=4.183), those with laptop was 84.667 (SD=3.266), with mobile phone was 87.085

(SD=3.364), and those with iPad was 88.333 (SD=4.163). Based on the result, it can be interpreted that there was no significant difference [ $t(143)=.4725$ , sig <0.05] between the mean scores of respondents' gadgets. This denotes that the gadgets of the respondents did not affect their academic performance. The results emphasize that possessing specific types of gadgets, whether desktops, laptops, mobile phones, or iPads, does not inherently translate into a significant difference in academic performance. This challenges common beliefs about the necessity of specific devices for academic success and contributes to the ongoing discourse on the role of technology in education (Nur et al., 2019; Pentang, 2021).

**Table 5.** Independent Sample t-test for The Gadgets Owned by The Respondents [(n=145) ( $\alpha=0.05$ )].

Gadgets	Mean Score	SD	DF	Tc-Stat	Sig. (2-tailed)	Decision
Desktop	85.500	4.183	143	.846	.4725	Accept $H_0$
Laptop	84.667	3.266				
Mobile Phone	87.085	3.364				
iPad	88.333	4.163				
Overall Mean	86.396	3.744				

### *Relationship between Gadget Use and Academic Performance*

As shown in Table 6, the mean score for respondents utilizing gadgets for assignments was 86.415 (SD = 3.384). The mean score for those employing gadgets to send emails was 87.667 (SD = 4.885). Similarly, respondents using gadgets for electronic journal subscriptions achieved a mean score of 86.667 (SD = 2.517). Those accessing social media accounts on gadgets obtained a mean score of 87.243 (SD = 2.608), while those utilizing gadgets for entertainment scored an average of 87.645 (SD = 3.517). Based on the result in the table below, it can be interpreted that there was no significant difference ( $t_{(143)} = .578$ ,  $p < 0.05$ ) between the mean scores of respondents' gadgets. This suggests that the observed mean scores for various gadget uses did not differ significantly among the respondents. It implies that the reasons respondents used gadgets, including assignments, emails, electronic journal subscriptions, social media, and entertainment, did not affect their academic performance. Coinciding with the findings of Sudiyono and Astuti (2021), there was no significant influence of gadget usage on students' learning interests. The results underscore the importance of nuanced interpretation, indicating that using gadgets for various purposes does not inherently correlate with academic success. This aligns with the conclusions drawn by Ng et al. (2020), wherein students who dedicated increased hours to mobile device usage did not exhibit superior performance when contrasted with their counterparts who allocated minimal time.

**Table 6.** Independent Sample t-test for The gadget Use of The Respondents [(n=145)].

Gadget Use	Mean Score	SD	DF	Tc-Stat	Sig. (2-tailed)	Decision
Assignment	86.415	3.384	143	.324	.578	Accept $H_0$
Email	87.667	4.885				
Journal	86.667	2.517				
Social Media	87.243	2.608				
Entertainment	87.645	3.517				
Overall Mean	86.527	3.382				

Table 7 unveils a correlation analysis between Gadgets and their Uses, shedding light on critical associations with Respondents' Academic Performance. The study reveals a positive and significant association between the use of gadgets and academic performance ( $r = .069$ ,  $p < .005$ ), which suggests that the frequency and manner in which gadgets are utilized have a notable impact on academic success, emphasizing the educational potential inherent in effective gadget use. This finding corresponds with the findings of Muhammad et al. (2022) and Borisovaa et al. (2016). Muhammad et al. (2022) found a positive correlation between gadgets and students' learning abilities, contributing to academic performance. Likewise, Borisovaa et al. (2016) asserted that gadgets enhance academic performance and decrease study time. However, it is crucial to highlight that the gadgets owned by the respondents do not exhibit a significant relationship with their academic performance. This underscores the importance of focusing on how gadgets are utilized rather than mere possession when examining their impact on academic outcomes. Furthermore, the observed relationships between gadget usage, and academic performance indicate that personal characteristics alone are insufficient in explaining the variations in academic achievement among the respondents. This aligns with the broader goal of the study, which seeks to understand the multifaceted dynamics influencing academic performance beyond individual attributes.

**Table 7.** Correlation between gadgets and their uses to respondents' academic performance.

Variable	Coefficient
Dependent Variable: MPS	
Gadgets Owned	.104
Use of gadget	.069*

\*Correlation is significant at a 0.05 level

### ***Students' Perception of Gadget Utilization to Learning***

Table 8 presents a comprehensive overview of respondents' perceptions regarding gadgets, offering valuable insights into their attitudes and preferences. Noteworthy results include strong agreement among respondents that gadgets are practical stress relievers (Mean = 1.5448) and a clear indication of their desire to establish school rules on gadget use within the school premises (Mean = 1.3310). Sarma et al. (2016) discuss the use of mobile phones for stress management and relaxation techniques, however, it does not mention any specific results or statistics related to the effectiveness of gadgets as stress relievers.

Respondents strongly affirmed that gadgets facilitate easy access to essential study materials, contributing to more productive and progressive school work (Mean = 1.7724). Additionally, there is consensus that gadgets aid in understanding complex topics (Mean = 1.9655), positively impacting the learning experience. The preference for allowing gadgets inside the classroom at any time (Mean = 1.9931) further emphasizes their perceived educational value. Furthermore, respondents expressed an increased interest in studying, attributing it to the assistance provided by gadgets (Mean = 2.000), indicating a motivational aspect linked to their use. This finding is comparable with Victoria (2021), in which gadgets in the educational process can positively affect students' motivation to learn and their perception of new material.



Respondents demonstrated disagreement with concerns related to the negative consequences of gadget use. Patil et al. (2023) found that using mobile phones can positively and negatively impact academic performance. These include absenteeism issues (Mean = 2.9724), difficulty concentrating on studies (Mean = 3.0138), skipping meals to use gadgets (Mean = 3.1448), and procrastination (Mean = 3.1517). This divergence suggests a positive perception of the benefits of gadget use among respondents, with fewer apprehensions regarding potential adverse effects like absenteeism, concentration issues, dietary habits, and procrastination. This aligns with the findings of Alla (2018), which revealed overall positive attitudes and perceptions among the students surveyed regarding the use of mobile devices. The parallel findings reinforce the idea that the benefits of using gadgets are perceived positively, with fewer worries about potential drawbacks.

**Table 8.** Students' perception of gadget use (n=145).

Statement	Mean	Description	Rank
Gadgets enhance academic performance by facilitating convenient access to essential study materials.	1.7724	Agree	3.5
Gadgets helps to get explanation on complex topics	1.9655	Agree	5
I become more interested in my subjects because of the help of gadgets.	2.0000	Agree	7
I can relieve stress and use it for entertainment purposes.	1.5448	Strongly Agree	2
I can stimulate my senses and imagination better.	2.2690	Agree	8
Gadgets help me to make my schoolwork more productive and progressive.	1.7724	Agree	3.5
I am more likely to procrastinate.	3.1517	Disagree	12
I have issues with absenteeism because I overspend time using gadgets.	2.9724	Disagree	9
I am having difficulty concentrating on my studies.	3.0138	Disagree	10
I skip meals to use gadgets	3.1448	Disagree	11
The school has to give rules on the use of gadgets inside the school premises.	1.3310	Strongly Agree	1
Gadgets have to be allowed inside the classroom at any time of the day.	1.9931	Agree	6
Overall Mean	2.2442	Agree	

The significance of these findings lies in establishing a positive association between gadget use and academic engagement. This aligns with understanding how gadgets contribute to students' learning experiences. The results emphasize the need to recognize and leverage the positive aspects of gadget use while also addressing any potential challenges. Previous studies supporting the positive impact of gadgets on academic engagement reinforce the importance of these findings, underscoring a growing consensus within the broader academic community.

## CONCLUSION

The study provides valuable insights into the potential impact of technology on academic performance. It reveals no significant difference in the mean scores among respondents with different gadgets, including desktops, laptops, mobile phones, and iPads.



This suggests that the variety of gadgets owned by the respondents did not exert a discernible effect on their academic performance. Similarly, findings imply that the specific purposes for which respondents used gadgets did not influence their academic performance. However, the use of gadgets is positively and significantly correlated with academic performance, implying that the frequency and manner in which gadgets are utilized may have some bearing on academic success. Furthermore, the study reveals a generally positive perception of gadgets in the academic environment, as they serve as effective stress relievers and improve academic performance. Respondents express increased interest in studying and perceive gadgets as valuable tools for making schoolwork more productive. The respondents overwhelmingly disagree with the notion of issues such as absenteeism, difficulty concentrating, skipping meals due to gadget use, and procrastination, suggesting that the positive impact of gadgets on academic engagement outweighs potential negative consequences. However, there is a divergence in opinions on whether gadgets should be allowed inside the classroom at any time, suggesting a nuanced view on the appropriate integration of technology within the academic setting.

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