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GADGET DEPENDENCY AND ITS IMPACT ON ACADEMIC PERFORMANCE: A STUDY AMONG HIGHER EDUCATION STUDENTS

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Abstract:

The growing use of gadgets in educational settings has significantly influenced students' academic experiences in various ways. This study investigates the dependency on gadgets in classrooms among students at a Malaysian university, focusing on its frequency and correlation with academic performance. A sample of forty students from the Faculty of Computer and Mathematical Sciences was selected through purposive sampling. Data collection was performed using a questionnaire distributed via WhatsApp and Telegram, followed by analysis using SPSS software. Findings revealed that while most students frequently use gadgets during lectures, there is no significant correlation between gadget usage and their academic performance, measured by GPA and CGPA. However, students perceived that gadget positively contributed to their academic engagement and efficiency. The results suggest that while gadgets are valuable for accessing educational resources, their use must be balanced to prevent distraction. The study concludes with

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recommendations for educators and institutions to optimise the integration of technology into classroom environments, promoting both responsible gadget use and effective learning outcomes.

Keywords:

Gadget Dependency, Academic Performance, Higher Education, Technology Integration

Introduction

The incorporation of technological advancements into society has profoundly transformed both the way people utilize technology and how they communicate through it, greatly shaping modern educational practices and the wider learning community (Gadzali, 2023; Martin et al., 2019). According to Hanaysha et al., (2023), considering these new developments, it is imperative that higher education institutions move swiftly and efficiently and incorporate technology into their curricula, teaching, and all other activities to enhance students' learning experience. The advancement of technology influences the use of gadgets in a classroom setting. Gadgets typically refers to small technological objects with specific functions, emphasizing their role as innovations or novelties in various fields, particularly in education where they serve as learning media (Julianingsih et al., 2021). In a classroom setting, gadgets can refer to electronic devices that students and educators use to enhance the learning process. Some of the examples include tablets, laptops and educational applications on smartphones.

In recent years, the importance of digital competency across different levels of education has been widely acknowledged (Alam et al., 2023). Hence, this has caused students in higher education institutions to be dependent on gadgets as gadgets provide students with easy access to a wealth of information and educational resources. Moreover, devices like tablets simplify notetaking during lectures and make it easier for students to collaborate on group projects. The choice to use gadgets often depends on personal preferences, learning styles, and the teaching approaches used in the classroom. Mohd Salim et al. (2023) emphasized on this matter by focusing on the ability of gadgets to enhance students learning experiences which eventually benefits students' communication skills.

The use of gadgets in the classroom undeniably enhances learning by offering interactive tools for students (Kumar, 2024; Kurniawan et al., 2019). However, their use should align with educational objectives and be thoughtfully integrated into the curriculum to ensure it supports, rather than hinders, student performance. One of the most fascinating yet concerning findings from extensive research is that, rather than using their digital skills to enhance their academic performance, students often prioritize technology for socializing and entertainment. This behaviour can negatively impact both their academic success and their socio-emotional well-being (Labăr & Ţepordei, 2019). In the contemporary educational landscape, the pervasive use of gadgets among university students in the classroom has become a prominent phenomenon (Nguyen, 2020). However, the extent of gadget use, its impacts on academic performance, and the correlation between gadget usage frequency and scholastic achievements remain inadequately understood (Al-Absy, 2023).

This study addresses this gap by investigating the use of gadget in class. It seeks to measure the frequency of gadget use, identify its effects on academic performance, and establish

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correlations between usage patterns and academic outcomes. As technology integration becomes integral to education, understanding the nuances of gadget use in classrooms is crucial for educators, policymakers, and institutions striving to create optimal learning environments. Thus, this study aimed to provide valuable insights into the complex relationship between gadget dependency and academic performance among University A students.

Research Objectives

This study aimed to analyse students' reliance on gadgets in class among degree students from a faculty at University A. The objectives of this study are:

a) To measure the frequency of use of gadgets in class.
b) To identify the impacts on academic performance due to the use of gadgets in class.
c) To find the correlation between the frequency of use of gadgets in class and the academic performance.
d) To identify student's perceptions towards gadget usage in class.

Literature Review

Teens and young adults are constantly connected, frequently checking and using their mobile devices, thanks to the widespread availability of digital devices and internet access (Labăr & Ţepordei, 2019). They are the most convenient device and typically have an internet connection, smartphone users are more susceptible to what some have called "smartphone addiction." It is therefore reasonable to assume that their routines will continue in the workplace or in the classroom. The most fascinating and troubling finding from a plethora of research is that students often use technology primarily for social and recreational purposes, which negatively impacts their overall academic performance and socio-emotional functioning, rather than utilizing it to improve the quality of their academic achievement. Nearly all students own a smartphone or tablet, and lecturers do not prohibit their use, except for assessment periods, if the devices are silent and do not interfere with the lesson or discussion. Hence, multitasking on a smartphone is allowed if there is no explicit or implicit law prohibiting the use of smartphones.

Bowman et al. (2010) explored the impact of instant messaging during reading in the early days of gadget use in classrooms. Their study revealed that using instant messaging (IM) negatively influenced students' reading comprehension and increased the time it took to read. Based on this research, Clinton (2021) conducted a comprehensive meta-analysis on the relationship between trend of multitasking through gadgets and reading performance. She found that there are negative relationships between the two practices throughout the studies involved in the meta-analysis, further strengthening the claim that gadgets have negative influence in a classroom setting. However, Krisnan et al. (2022) challenged this through their findings which show that gadgets can provide positive supports in students' learning experiences.

There are studies which suggested that the use of technology in classrooms can interfere with classroom learning and negatively impact academic performance. Urien (2024) highlighted that the constant checking of mobile phones disrupts the flow of instruction. This can affect students' understanding and retention in the process of learning, ultimately affecting their academic performance (Urien, 2024). Additionally, Gath (2024) supported this claim by stating that the increased use of gadgets especially mobile phones often leads to distractions in students' learning process. Ultimately, if the use of gadgets is not controlled, it may lead to various implications on students' academic results thus affecting their future (Passah et al.,

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2022). However, Lai et al. (2023) disagree with this, stating that the use of technological devices are able to contribute to learning beyond the classroom walls through virtual classes and programs.

Gökçearslan et al. (2016), in their study titled "Modelling Smartphone Addiction: The Role of Smartphone Usage, Self-Regulation, General Self-Efficacy, and Cyberloafing in University Students," found a strong connection between smartphone addiction and factors such as smartphone usage, self-regulation, general self-efficacy, and cyberloafing. The study discusses the results within the context of the effect of smartphone addiction on learning environments and individuals. Ultimately, it should be noted that smartphone addiction can have a variety of detrimental effects on learning environments and individuals, as well as on social relationships, academic performance, cyberloafing, self-regulation, and general self-efficacy.

Jiang et al. (2022) and Lepp (2014) investigated the relationship between gadgets such as mobile phones with outcomes such as academic performance, anxiety, and satisfaction with life in college students. The study found that high gadget usage was associated with lower GPA and higher anxiety, which in turn was related to lower satisfaction with life. The studies suggest that increased gadgets use may have negative impacts on academic performance, mental health, and subjective well-being. This relationship has been consistently observed in various studies, indicating that increased gadget use, including calling and texting, is associated with lower academic performance. This aligns with Wan Mustapha et al. (2019) who emphasized on the importance of social presence if social learning environments that are crucial to students' knowledge acquisition which could be impaired by the extensive use of gadgets.

Methodology

The instrument used to collect the data was a questionnaire. This method is used to survey the issues of dependency of gadgets by students in class of University A. The questionnaire consisted of 39 questions which were divided into 4 different sections. Section 1 focused on the demographic information, Section 2 focused on the use of gadgets in class, section 3 focused on the academic performance of the respondent and Section 4 focused on student's perception towards the usage of gadgets in class. The respondents consisted of 40 University A students coming from the Faculty of Computer and Mathematical Sciences at the University. There were 27 female respondents and 13 male respondents. The age of the respondents was 21 and above. The questionnaire was distributed through WhatsApp and Telegram until 40 responses were collected. All the respondents answered and returned the questionnaire. The data were analysed to transform from frequency count into percentages. Then the data was visualized into charts. Then, related data to find the correlation between the frequency of use of gadgets in class and the academic performance analysed by using the Statistics Package for Social Science (SPSS) Software.

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Findings

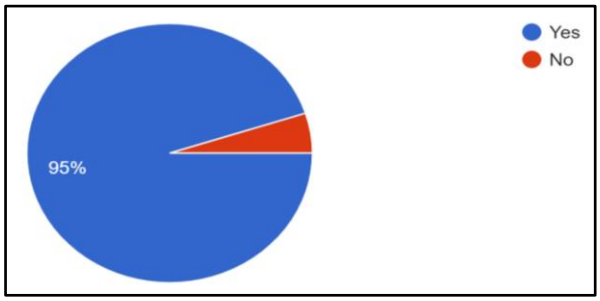

Figure 1: The Percentage Of Gadgets Usage In Class

Based on Figure 1, most of the respondents (95%) answered yes, they use gadgets in class and only 5 percent of the respondents answered no.

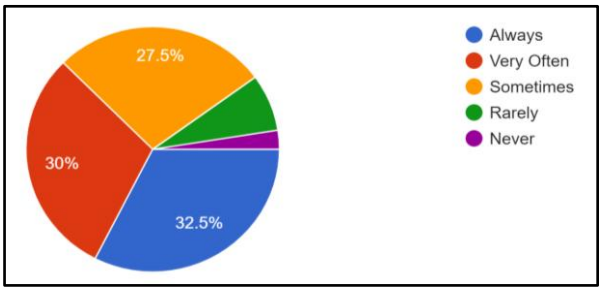

Figure 2: The Percentage Of Frequency Of Using Gadgets In Class

For this question, the options given were always, very often, sometimes, rarely and never. From Figure 2, 32.5 percent of the respondents answered always, and 30 percent of the respondents answered very often. 27.5 percent said they only use their gadgets sometimes in class. The remaining 7.5 percent answered that they rarely use their gadgets in class and 2.5 percent respondents answered never.

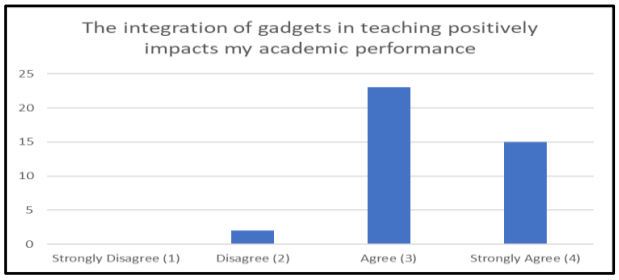

Figure 3: Question 1; The Integration Of Gadgets In Teaching Positively Impacts My Academic Performance

Based on Figure 3, it can be concluded that only 2 respondents disagree, while the remaining 23 and 15 respondents chose to agree and strongly agree respectively.

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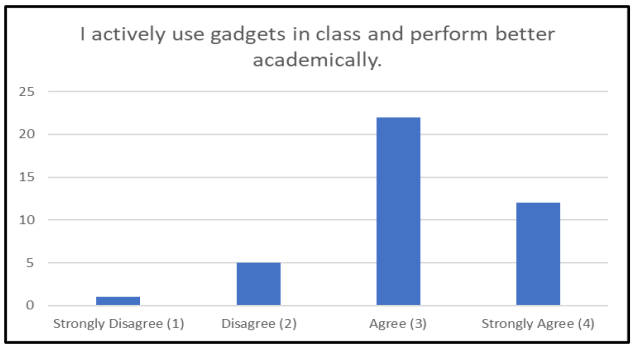

Figure 4: Question 2; I Actively Use Gadgets In Class And Perform Better Academically

Referring to Figure 4, 1 respondent strongly disagrees with the statement that they actively use gadgets in class and perform better academically. Five respondents disagreed. The remaining 22 and 12 respondents chose to agree and strongly disagree respectively.

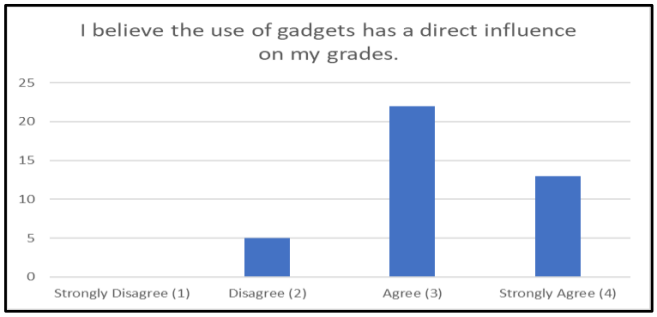

Figure 5: Question 3; I Believe The Use Of Gadgets Has A Direct Influence On My Grades

Based on Figure 5, only 5 respondents disagree while the remaining 22 and 13 respondents chose to agree and strongly disagree respectively, to the statement that they believe the use of gadgets has a direct influence on their grades.

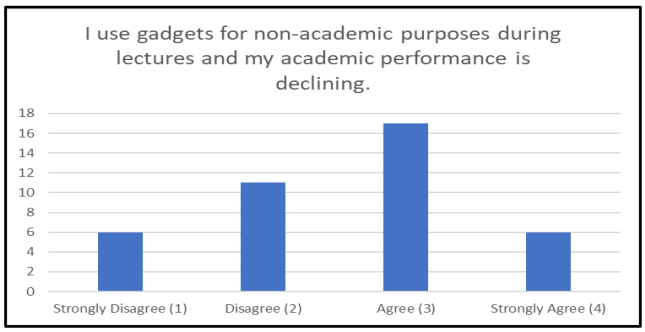

Figure 6: Question 4; I Use Gadgets For Non-Academic Purposes During Lectures And My Academic Performance Is Declining

For the next statement, based on Figure 6, it can be seen that 6 respondents strongly disagree and 11 respondents disagree with the statement. The remaining 17 and 6 respondents chose agree and strongly agree respectively.

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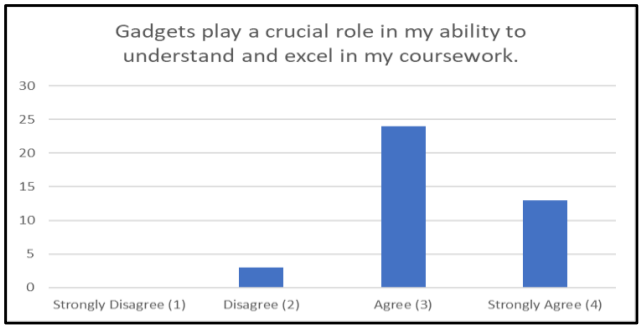

Figure 7: Question 5; Gadgets Play A Crucial Role In My Ability To Understand And Excel In My Coursework

For the statement 'Gadgets play a crucial role in my ability to understand and excel in my coursework', to this statement, based on Figure 7 only 3 respondents disagree. The remaining 24 and 13 respondents agree and strongly agree respectively to the statement.

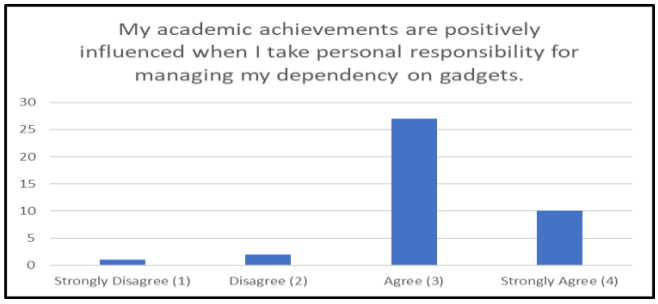

Figure 8: Question 6; My Academic Achievements Are Positively Influenced When I Take Personal Responsibility For Managing My Dependency On Gadgets

And lastly, for the statement 'My academic achievements are positively influenced when I take personal responsibility for managing my dependency on gadgets', to this statement, based on Figure 8, only 1 respondent strongly disagrees, and 2 respondents disagree. The remaining 27 and 10 respondents agree and strongly disagree respectively to the statement.

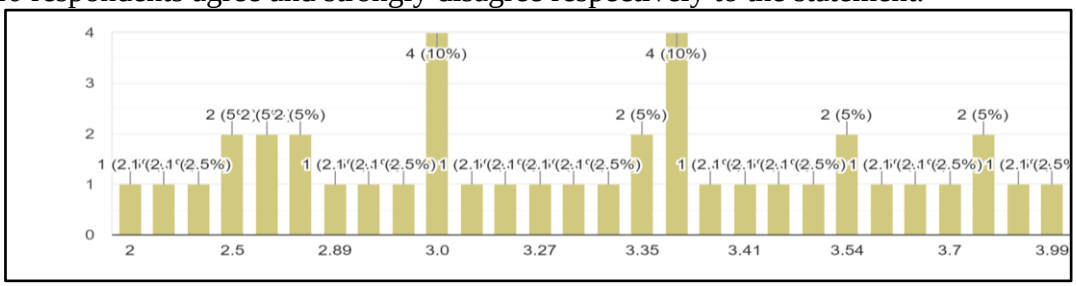

Figure 9: Current GPA Responses From The Respondents

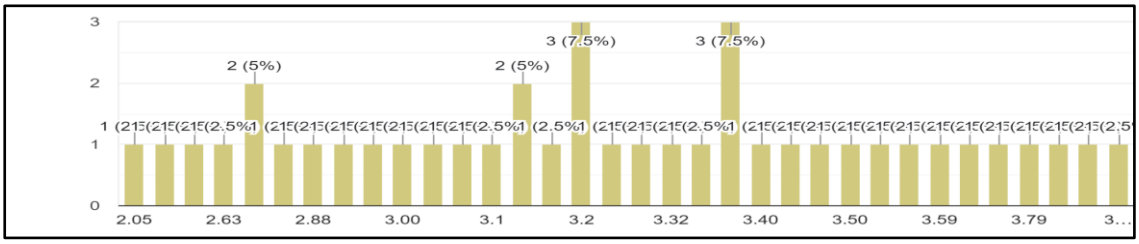

Figure 10: CGPA Responses From The Respondents

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Correlations

			GPA	freq_use_gadgets_in_class
Spearman's rho	GPA	Correlation Coefficient	1.000	-.233
		Sig. (2-tailed)	.	.147
		N	40	40
	freq_use_gadgets_in_class	Correlation Coefficient	-.233	1.000
		Sig. (2-tailed)	.147	.
		N	40	40

Figure 11: Correlations between GPA and Frequency Of Use Of Gadgets In Class And Academic Performance

As shown in Figure 11, the GPA and frequency of use of gadgets in class and academic performance has 0.147 Sig. value. Since this value is bigger than 0.05, it can be concluded that the GPA and frequency of use of gadgets in class and academic performance has no correlation.

Correlations

			freq_use_gadgets_in_class	CGPA
Spearman's rho	freq_use_gadgets_in_class	Correlation Coefficient	1.000	-.232
		Sig. (2-tailed)	.	.150
		N	40	40
	CGPA	Correlation Coefficient	-.232	1.000
		Sig. (2-tailed)	.150	.
		N	40	40

Figure 12: Correlations between CGPA and Frequency Of Use Of Gadgets In Class And Academic Performance

Shown in Figure 12, the CGPA and frequency of use of gadgets in class and academic performance has 0.150 Sig. value and since this value is bigger than 0.05, it can be concluded that the CGPA and frequency of use of gadgets in class and academic performance has no correlation.

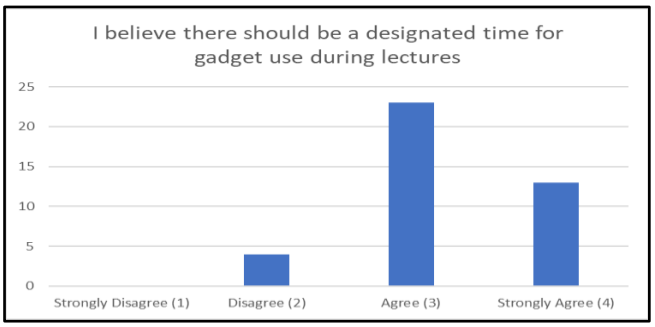

Figure 13: Question 1; I Believe There Should Be A Designated Time For Gadget Use During Lectures

For Question 1, based on Figure 13, only 4 respondents disagree. The remaining 23 and 13 respondents chose to agree and strongly agree respectively.

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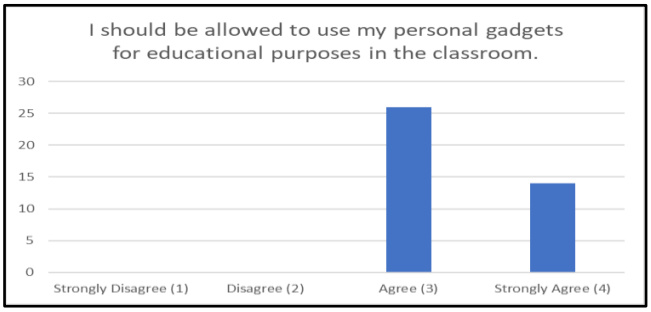

Figure 14: Question 2; I Should Be Allowed To Use My Personal Gadgets For Educational Purposes In The Classroom

For Question 2, based on Figure 14, 26 respondents chose they agree with the statement and the remaining 14 chose strongly agree.

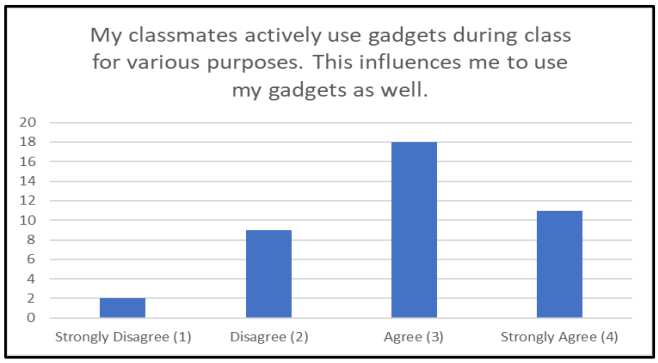

Figure 15: Question 3; My Classmates Actively Use Gadgets During Class For Various Purposes. This Influences Me To Use My Gadgets As Well

For Question 3, based on Figure 15, it can be inferred that 2 and 9 respondents strongly disagree and disagree respectively with the statement. While the remaining 18 and 11 respondents agree and strongly agree respectively to the statement.

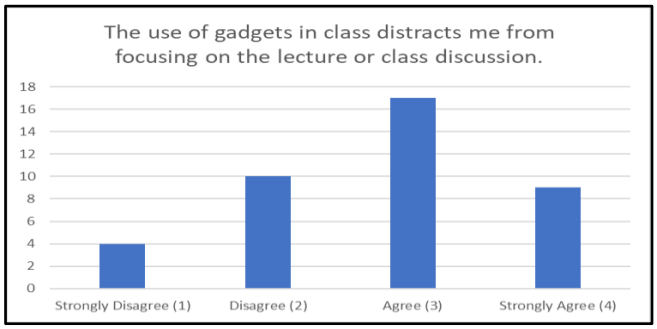

Figure 16: Question 4; The Use Of Gadgets In Class Distracts Me From Focusing On The Lecture Or Class Discussion

For the next question, based on Figure 16, 4 and 10 respondents strongly disagree and disagree with the statement 'The use of gadgets in class distracts me from focusing on the lecture or class discussion', respectively. The remaining 17 and 9 respondents chose the option agree and strongly agree, respectively.

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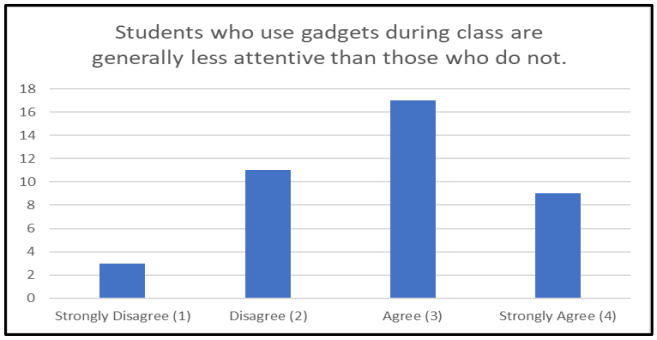

Figure 17: Question 5; Students Who Use Gadgets During Class Are Generally Less Attentive Than Those Who Do Not

Based on Figure 17, 3 and 11 respondents strongly disagree and disagree with the statement, respectively. The remaining 17 and 9 respondents chose to agree and strongly agree with the statement, respectively.

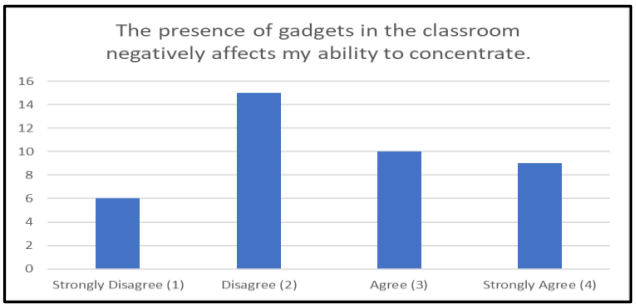

Figure 18: Question 6; The Presence Of Gadgets In The Classroom Negatively Affects My Ability To Concentrate

Based on Figure 18, 6 and 15 respondents strongly disagree and disagree with the statement, respectively. The remaining 10 and 9 respondents chose to agree and strongly agree with the statement, respectively.

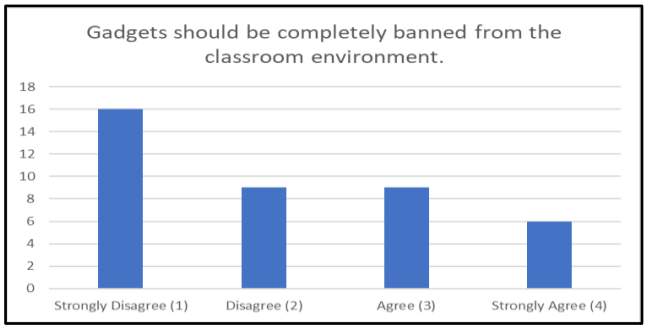

Figure 3.6.8: Question 7; Gadgets Should Be Completely Banned From The Classroom Environment

For the next question, based on Figure 19, 16 and 9 respondents strongly disagree and disagree with the statement ‘Gadgets should be completely banned from the classroom environment’,

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respectively. The remaining 9 and 6 respondents chose the option agree and strongly agree, respectively.

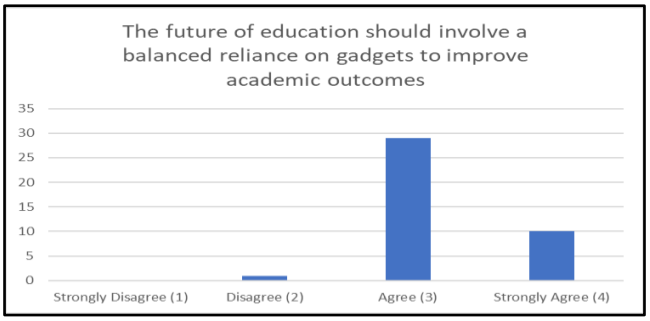

Figure 20: Question 8; The Future Of Education Should Involve A Balanced Reliance On Gadgets To Improve Academic Outcomes

For the next question, based on Figure 20, it can be seen that only 1 respondent disagrees with the statement 'The future of education should involve a balanced reliance on gadgets to improve academic outcomes'. The remaining 29 and 10 respondents chose the option agree and strongly agree, respectively.

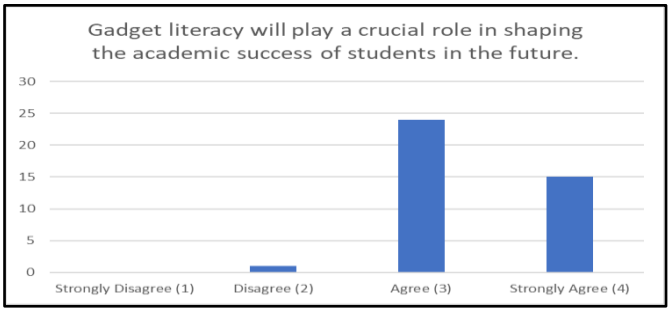

Figure 21: Question 9; Gadget Literacy Will Play A Crucial Role In Shaping The Academic Success Of Students In The Future

For Question 9, based on Figure 21, only 1 respondent disagreed with the statement 'Gadget literacy will play a crucial role in shaping the academic success of students in the future'. The remaining 24 and 15 respondents chose to agree and strongly agree respectively.

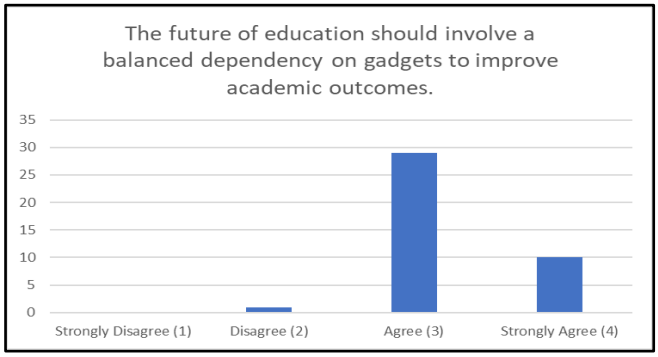

Figure 22: Question 10; The Future Of Education Should Involve A Balanced Dependency Of Gadgets To Improve Academic Outcomes

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For Question 10, based on Figure 22, only 1 respondent disagreed with the statement 'The future of education should involve a balanced dependency of gadgets to improve academic outcomes'. The remaining 29 and 10 respondents chose to agree and strongly agree respectively.

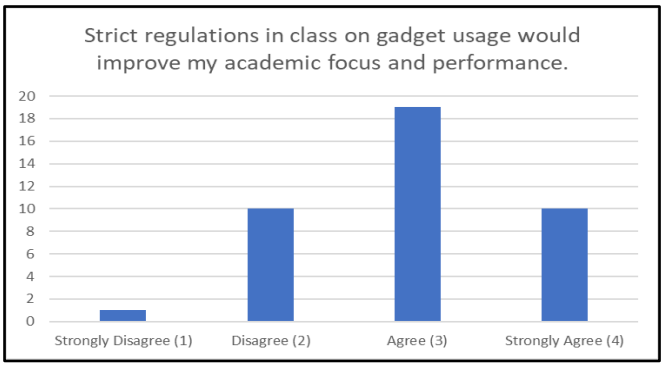

Figure 23: Question 11; Strict Regulations In Class On Gadget Usage Would Improve My Academic Focus And Performance

For the last question, based on Figure 23, 1 and 10 respondents strongly disagree and disagree with the statement 'Strict regulations in class on gadget usage would improve my academic focus and performance', respectively. The remaining 19 and 10 respondents chose the option agree and strongly agree, respectively.

Discussion

Research Objective One: According to the surveys, most respondents (combining "always" and "very often") appeared to use their electronic devices in the classroom frequently, suggesting a significant level of technological integration in the classroom. While a small percentage of participants either reported using their gadgets "never," "sometimes," or less frequently ("rarely"). Thus, the results for the frequency usage of gadgets in class were mixed.

Three important details become clear when analysing the survey data on the use of gadgets in the classroom. First, by using interactive and technology-driven methods of learning, educators may adapt their teaching strategies to take advantage of the widespread use of gadgets. Secondly, there's a chance to enhance the way digital literacy is provided so that students learn the skills they need to use gadgets responsibly. Finally, a systematic approach to technology integration is essential, with the goal of maximizing the educational benefits of gadgets while reducing potential distractions. Together, these suggestions address the various degrees of technology use and provide a productive and well-rounded learning environment.

Research Objective Two: The survey results revealed that most participants viewed technology as having a significant positive impact on students' academic performance. Many respondents noted that using gadgets in the classroom directly improved their grades and enhanced their overall academic success. Nonetheless, some students also acknowledged utilizing technology during lectures for non-academic purposes, indicating a possible concentration difficulty. Despite this, the majority think that the use of technology was essential to their understanding and excellence in the classroom. Additionally, those surveyed highlighted the beneficial impact of personal responsibility in managing gadget dependence on academic performance. Overall, the results showed that students have an intricate knowledge of the benefits and drawbacks of

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using technology in the educational environment. Hence, the results were mixed for this objective.

Three main details were brought to light by the survey results. Initially, educational institutions ought to proactively encourage the responsible usage of electronic devices by students, tackling the acknowledgement tendency to get involved in extracurricular activities while in class. Furthermore, educators should carefully incorporate technology into the syllabus by taking advantage of the positive perception that it has on student performance. To sum up, schools and universities should give top priority to digital literacy programs that give students the necessary skills to use technology gadgets for learning. All these suggestions are designed to foster a responsible and balanced use of technology in the classroom by highlighting the benefits of gadget use while reducing any possible problems.

Research Objective Three: The findings show that, as the Sig. value of 0.147 suggested, there is no statistically significant correlation between GPA and the frequency of gadget use in class. Similarly, the Sig. value of 0.150 indicates that there is no statistically significant link between the frequency of gadget use and CGPA. As a result, the data analysis indicated that there is not a significant correlation between the use of technology in the classroom and academic achievement, as shown by the GPA and CGPA. Thus, the results for the correlation between the frequency of usage of gadgets and scholastic achievement were positive.

Three details are presented regarding the fact that there was no statistically significant correlation found between the frequency of gadget use in the classroom and GPA/CGPA. First, carry out additional research to find out what other factors, beyond the use of gadgets, affect academic results. To make sure that the integration of educational technology is in alignment with academic objectives, second, academic institutions should consider evaluating its effectiveness. Finally, institutions may develop digital literacy support programs to give students the necessary resources they need to use technology to enhance learning. These suggestions are meant to improve comprehension, maximize the use of technology, and nurture digital literacy to have a positive impact on academic achievement.

Research Objective Four: The results indicated that respondents' opinions on the use of technology in the classroom were not all that clear. Opinions on the impact of peer gadget use and the perceived distraction it generated differed, even though most people believed that certain times for students to use gadgets during lectures were a good idea and that using personal gadgets for educational purposes was appropriate. Opinions on whether the presence of gadgets affected concentration varied, and there were differences among respondents over the idea of prohibiting gadgets from classrooms. However, a solid majority underlined the importance of gadget literacy in defining the future of education and favored a balanced reliance on gadgets for greater academic achievements. Based on individual preferences and views, the results emphasized the necessity of a comprehensive and adaptable approach to technology use in the educational setting. Thus, the results were mixed.

Institutions should evaluate the effects of any technology regulations on a regular basis, getting input from teachers and students to make sure the policies are working to improve student performance and concentration in the classroom. Moreover, encouraging student-teacher cooperation in exploring innovative methods for incorporating technology into the classroom can strengthen the beneficial connection between technology and learning. Lastly, educational institutions must provide strategies and resources to help students minimize distractions during

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class, tackling differing opinions on the potential negative impacts of gadgets on concentration. Intensive and efficient learning can be enhanced by workshops on time management, note-taking techniques, and setting up a digital learning environment.

Recommendation

University should encourage students to use gadgets in class as most students agree that using gadgets in class helps to enhance their overall learning experience. This may benefit both students and lecturers as technology provides access to a variety of digital resources, interactive applications, and online platforms for better understanding and engagement with course materials. Therefore, students can quickly retrieve relevant data and broaden their understanding related to topics discussed in class. Besides, digital tools streamline tasks such as note-taking, document sharing, and time management contribute to a more organized learning process.

Although the use of gadgets is encouraged in class, students must limit the usage of gadgets during lectures as excessive use of gadgets can lead to distractions, hindering students' focus on lectures and class activities, as agreed by majority of students surveyed. Strict regulations on gadget usage can help mitigate academic dishonesty, as students may be tempted to use devices for unauthorized purposes during lectures. Apart from that, limiting gadgets use encourages students to engage in face-to-face interactions with peers and lecturers. Therefore, students should establish clear boundaries in using gadgets in class to foster better communication skills, as well as maintaining a conducive learning environment.

Lecturers could consider incorporating designated breaks during lectures to allow students to use their gadgets. These breaks can help students refresh their minds and reduce fatigue from prolonged lectures, especially since classroom sessions often last up to two hours. Besides, gadget breaks offer students an opportunity to review and consolidate what they have learned on their gadgets for better understanding of the material taught beforehand. Students can access relevant information, research materials, and collaborate with peers within the short gadget breaks, helping students to return to the lecture with renewed focus. Thus, it can be concluded that giving students a short break during lectures to use their gadgets, be it for entertainment purposes or educational purposes, can contribute to a balanced and healthier overall learning experience.

University administrators responsible for facilities and campus services should work toward creating a more tech-friendly environment by equipping classrooms with the necessary infrastructure to support students in using gadgets effectively for learning. This may include, installing charging stations in or near classrooms to accommodate students who rely on electronic devices, a more robust and reliable Wi-Fi network with high-speed internet access, and subscribing more essential educational applications that align with specific needs and goals of the educational institution. Additionally, universities should ensure that they comply with data privacy and security regulations Universities may also establish a reliable technology support system for students and lecturers to address any issues that may arise regarding those facilities provided to ensure a quick resolution of technical difficulties, as well as minimizing disruptions during lectures. By incorporating these elements, universities can create an environment that not only supports students in using gadgets for educational purposes, but also enhances the overall learning process through seamless integration of technology into the classroom settings.

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