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The Phenomenon of Gadget Dependence in Learning in the Digital Era for Students

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Abstract: The development of digital technology has driven a significant transformation in the learning system in higher education. Gadgets, especially smartphones, have become the primary device supporting learning in the digital era. However, the high intensity of gadget use among students has also given rise to a phenomenon of dependency that has the potential to impact the quality of the learning process and outcomes. This study aims to examine the phenomenon of gadget dependency in learning in the digital era among students based on the results of previous research. The research method used is a qualitative approach with a library research type. Data were obtained from various scientific literature sources in the form of national and international journal articles relevant to the topic of gadget dependency and student learning. Data collection techniques were carried out through systematic literature searches, while data analysis used content analysis to identify and synthesize research findings. The results of the study indicate that gadget dependency among students impacts various aspects of learning, including decreased concentration, learning motivation, academic productivity, and the quality of social interactions. In addition, gadget dependency is influenced by low student self-control, less interactive learning designs, and a lack of digital literacy oriented towards the wise use of technology. Therefore, collaborative efforts are needed from universities, lecturers, and students to manage gadget use proportionally and productively. This research is expected to provide theoretical and practical contributions in the development of more effective and sustainable digital learning in higher education.

Keywords: Gadget dependence, digital learning, digital literacy, higher education.

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INTRODUCTION

The rapid development of digital technology has brought significant changes to various aspects of human life, including higher education. Universities, as academic institutions, are required to adapt to technological advances to improve the quality of learning. The use of gadgets such as smartphones, tablets, and laptops has now become an integral part of student learning activities. Gadgets serve as the primary means for accessing digital teaching materials, participating in online lectures, communicating with lecturers, and completing and submitting academic assignments. This makes learning in the digital era increasingly flexible, efficient, and unconstrained by space and time. However, despite these conveniences, the increasingly intensive use of gadgets has also given rise to new problems,

one of which is gadget dependency among students. This dependency is not only related to academic needs but also extends to non-academic uses such as social media, digital entertainment, and online games. This phenomenon is a critical issue in higher education because it has the potential to impact the overall quality of student learning processes and outcomes.

Learning in the digital era essentially requires students to be independent, digitally literate, and able to manage time and technology wisely. Gadgets are designed as learning aids that can increase access to information and broaden students' scientific horizons. However, in practice, the line between gadget use for academic and non-academic purposes is often blurred. Students tend to use the same device for both studying and entertainment and social interaction. As a result, students' attention is easily distracted by social media notifications, instant messages, or other digital entertainment content. This situation can trigger excessive and uncontrolled gadget use. When gadget use is no longer based on learning needs but rather on habitual impulses or psychological dependence, the gadget's function as a learning tool becomes less optimal. Therefore, the phenomenon of gadget dependency needs to be thoroughly understood as a real challenge in implementing digital learning in higher education.

Several previous studies have shown that gadget dependency, particularly smartphones, is significantly linked to a decline in student learning quality. Students who experience gadget dependency tend to have low concentration levels, are easily distracted, and have difficulty managing study time. High-intensity gadget use often causes students to procrastinate on completing academic assignments, lack focus during lectures, and experience mental fatigue due to excessive screen time. Furthermore, gadget dependency is also associated with decreased student academic achievement. This is caused by reduced effective study time and a decreased quality of understanding of lecture material. Thus, although gadgets play a crucial role in supporting digital learning, uncontrolled use can negatively impact students' academic achievement.

In addition to impacting academic achievement, gadget dependency also impacts students' motivation to learn. Motivation to learn is an internal factor that significantly determines the success of the learning process. Students with high motivation to learn tend to be active, disciplined, and responsible in their academic pursuits. However, excessive use of gadgets for non-academic activities can diminish students' interest and enthusiasm for learning. Gadget dependency often leads students to become more interested in digital entertainment content than in lecture material. As a result, the learning process becomes a mere formality without optimal cognitive and emotional engagement. This decline in motivation to learn, if left unchecked for the long term, can lead to a lower quality of college graduates. Therefore, the phenomenon of gadget dependency needs to be studied not only from a technological perspective, but also from a psychological and pedagogical perspective.

The phenomenon of gadget dependency among students also has implications for learning productivity. Learning productivity is related to a student's ability to utilize time and resources effectively to achieve academic goals. Gadget dependency can cause students to spend excessive time on digital activities irrelevant to learning, such as surfing social media or watching entertainment content. This reduces study time that should be used for reading, discussions, or completing assignments. Furthermore, continuous gadget use can also lead to physical and mental fatigue, ultimately reducing student learning productivity. This situation shows that gadget dependency is not simply a matter of habit but is also closely related to the effectiveness of learning in the digital age.

From a social perspective, gadget dependency also affects student interaction patterns on campus. Students who are overly dependent on gadgets tend to be more active in virtual interactions than in person. This can reduce the quality of face-to-face communication, academic discussions, and collaboration in group activities. Social interaction is a crucial part of the learning process in higher education, particularly in developing critical thinking, communication, and collaboration skills. Gadget dependency also has the potential to foster individualistic attitudes and reduce students' social

sensitivity. Thus, the impact of gadget dependency is not only felt academically, but also on students' overall social and personality development.

However, it is important to understand that gadgets are not the primary cause of learning problems, but rather how they are used. Gadgets can be a very effective learning tool when used in a targeted and proportionate manner. Therefore, the problem of gadget dependency needs to be addressed with a balanced approach, not simply prohibiting their use, but guiding students to use gadgets wisely and productively. Universities have a strategic role in designing digital learning systems that minimize the risks of gadget dependency. Lecturers are also required to develop interactive and meaningful learning strategies so that students are not easily distracted by gadget use outside of academic contexts.

Studying gadget dependency in learning in the digital era is crucial for providing a comprehensive picture of the real conditions facing students today. Research on this phenomenon can form the basis for making more appropriate educational policies that are responsive to technological developments. Furthermore, the study's findings are also expected to provide theoretical contributions to the development of educational science, particularly regarding digital learning and student learning behavior. By understanding the factors influencing gadget dependency, universities can formulate preventive and curative measures to improve the quality of learning in the digital age.

Based on the above description, it can be concluded that the phenomenon of gadget dependency among college students is a complex issue that requires serious attention. Gadget dependency impacts not only academic aspects but also student motivation, productivity, and social interactions. Therefore, research into the phenomenon of gadget dependency in learning in the digital age is highly relevant and urgent. This article aims to examine and analyze the phenomenon of gadget dependency among college students based on the results of previous research, thereby providing a deeper understanding and strategic recommendations for developing more effective and sustainable learning in higher education.

METHODS

This research employed a qualitative approach with a library research approach. This approach was chosen because the research aimed to review, analyze, and synthesize various previous research findings relevant to the phenomenon of gadget dependency in digital-era learning among college students. Library research allows researchers to obtain a comprehensive overview of concepts, empirical findings, and trends in research conducted by previous researchers. Through this approach, researchers did not collect data directly in the field, but instead utilized published scientific sources in the form of journal articles, proceedings, and other scholarly works. A qualitative approach was deemed appropriate because the focus of this research was to understand the phenomenon, patterns, and implications of gadget dependency in the context of student learning in depth and descriptively.

The data sources in this study consisted of secondary data obtained from various scientific literature relevant to the research topic. The literature used included national and international journal articles, reference books, and research reports discussing digital learning, gadget use, and gadget dependency among college students. Source selection was carried out by considering the criteria of topic relevance, publisher credibility, and research novelty. The literature analyzed primarily came from publications within the last ten years to ensure the findings remain contextualized with current developments in digital technology. Therefore, the data used is expected to represent the actual conditions of learning in the digital era.

Data collection techniques were conducted through a systematic literature search using scientific journal databases and academic publication portals. Keywords used in the search included "gadget addiction," "smartphone addiction," "digital learning," and

"students." After the literature was collected, the researchers selected the sources most relevant to the research focus. Literature that did not directly address the relationship between gadget use and student learning was eliminated. This process aimed to ensure that the analyzed data truly supported the research objectives and strengthened the theoretical framework.

The data analysis technique used in this study was content analysis. Content analysis involves in-depth reading, understanding, and interpreting the literature to identify key themes related to the phenomenon of gadget addiction. The analysis phase included grouping research findings based on specific aspects, such as the impact of gadget addiction on students' academic achievement, learning motivation, productivity, and social interaction. Next, the researcher synthesized the research results to obtain a comprehensive and integrated understanding. The analysis was then presented in descriptive-analytical form, emphasizing the interrelationships between the research findings.

The validity of the data in this study was maintained through source triangulation, which involved comparing and confirming findings from various literature sources. By using diverse sources, the researcher attempted to minimize bias and increase the validity of the study results. Furthermore, the researcher conducted a critical review of previous research methods and results to ensure that the conclusions drawn were based on strong data and arguments. Through these steps, this study is expected to provide an objective and scientifically sound picture of the phenomenon of gadget dependence in digital-age student learning.

To clarify the research flow, the stages of the literature review in this study were conducted systematically and sequentially. The first stage was identifying the research problem, namely the phenomenon of gadget dependency in student learning in the digital age. The second stage was searching for and collecting relevant literature from various scientific sources. The third stage included selecting and classifying the literature based on its relevance to the topic, objectives, and focus of the research. The fourth stage was analyzing and synthesizing previous research findings using a content analysis approach. The final stage was drawing conclusions and formulating the implications of the research results. These stages were conducted carefully to ensure that the study results were systematic, structured, and academically accountable.

In the data analysis process, the researcher used a conceptual framework linking gadget use to various aspects of student learning. This framework encompasses academic, psychological, and social dimensions. The academic dimension encompasses academic achievement, material comprehension, and study time management. The psychological dimension encompasses learning motivation, concentration, and tendencies toward addictive behavior toward gadgets. Meanwhile, the social dimension encompasses student interaction patterns with lecturers and fellow students in the learning context. The use of this conceptual framework assisted the researcher in categorizing the research findings more systematically and facilitated comprehensive and focused data interpretation.

This study's limitations lie in its reliance on secondary data sourced from previous research, thus the results are heavily influenced by the quality and scope of the literature analyzed. Nevertheless, the library research approach still makes an important contribution to building a theoretical and empirical understanding of the phenomenon of gadget addiction. Therefore, the results of this study are expected to serve as a basis for further research using field approaches, both qualitative and quantitative, to examine the findings more deeply and contextually, according to the characteristics of specific students and educational institutions.

RESULTS

A review of various previous studies indicates that gadget dependency among students is a phenomenon that is intensifying with the intensity of digital learning implementation.

Gadgets, particularly smartphones, have become the primary tool in students' academic activities, from accessing lecture materials, attending online classes, to communicating with lecturers and fellow students. However, research findings indicate that excessive and uncontrolled gadget use tends to shift from academic to non-academic purposes. Students often use gadgets simultaneously for studying and accessing social media, digital entertainment, or instant messaging apps. This condition leads to multitasking, which impacts decreased focus and learning effectiveness. This phenomenon reinforces the view that gadget dependency is not merely a technical issue but also relates to students' learning behavior and self-control in utilizing digital technology.

From the perspective of academic achievement, the results of the research synthesis indicate a tendency for a negative relationship between gadget dependency and student learning outcomes. Students with high levels of gadget dependency tend to experience difficulty maintaining concentration during the learning process, both in face-to-face and online lectures. Distractions due to notifications and the habit of repeatedly checking gadgets impact the quality of material comprehension. Several studies have also revealed that gadget dependency contributes to procrastination, resulting in assignments not being completed optimally and on time. This results in lower academic grades and student learning outcomes. These findings suggest that while gadgets support digital learning, excessive dependency can potentially hinder the achievement of students' academic goals.

In addition to academic achievement, gadget dependency also significantly impacts student learning motivation. Studies show that students who are overly dependent on gadgets tend to have low learning motivation, especially when gadget use is dominated by entertainment rather than academic pursuits. The attraction to instant and entertaining digital content makes students less interested in engaging deeply in the learning process. As a result, learning becomes passive and meaningless. This decreased learning motivation results in lower student participation in discussions, a lack of independent learning initiatives, and a decreased sense of responsibility for academic assignments. These findings emphasize that gadget dependency affects not only the cognitive but also the affective aspects of students' learning process.

In terms of learning productivity, previous research has shown that gadget dependency correlates with lower effectiveness in student study time. Students who are unable to control their gadget use tend to waste study time on digital activities irrelevant to their studies. Time that should be used for reading references, preparing assignments, or reflecting on learning is instead consumed by activities on social media or digital entertainment platforms. Furthermore, prolonged use of gadgets also causes physical and mental fatigue, ultimately reducing learning productivity. These findings indicate that gadget dependence is a factor hindering effective and efficient learning in the digital age.

Gadget dependence also impacts students' social aspects within the learning context. Studies show that students who are highly dependent on gadgets tend to reduce direct social interactions on campus. Academic communication, which should take place through face-to-face discussions, is often replaced by brief and less in-depth digital communication. This impacts the quality of academic discussions, group work, and students' interpersonal communication skills. Social interaction is a crucial component of learning in higher education, particularly in developing critical and collaborative thinking skills. Thus, gadget dependence impacts not only individual students but also the dynamics of collective learning.

Based on the results of this study, it is clear that the phenomenon of gadget dependency in learning in the digital age poses a serious challenge to higher education. While gadgets hold great potential as learning media, uncontrolled use can have various negative impacts. Therefore, strategic efforts are needed from various parties, including universities, lecturers, and students, to manage gadget use wisely. Strengthening digital literacy, developing interactive learning strategies, and raising student awareness of the importance of self-control in gadget use are crucial steps to minimize the risk of

dependency. With proper management, gadgets are expected to function optimally as learning support tools, rather than hindering the educational process in the digital age.

Previous research findings also indicate that gadget dependency is closely related to students' self-regulation skills during the learning process. Students with low levels of self-control are more likely to fall into excessive gadget use, especially when facing academic pressure or learning boredom. Gadgets are often used as a means of escape to reduce stress, but in the long run, they actually worsen study habits. This dependency makes it difficult for students to prioritize academic obligations and digital entertainment activities. As a result, the learning process becomes unstructured and learning objectives are difficult to achieve optimally. These findings confirm that the issue of gadget dependency is not solely related to technology, but also to aspects of students' personality and self-management. Therefore, strengthening self-regulation skills is a crucial factor in overcoming gadget dependency in learning in the digital age.

In the context of higher education, the role of lecturers is crucial in managing gadget use in the classroom. The study results show that monotonous and less interactive learning models tend to increase the potential for student distraction from gadgets. Conversely, learning that actively engages students, such as problem-based discussions, collaborative projects, and the targeted use of technology, can reduce the tendency to use gadgets outside of academic contexts. This demonstrates that gadget dependency cannot be separated from the learning design implemented. Lecturers are required not only to master the material but also to possess adequate pedagogical competence and digital literacy. Thus, gadgets can function as effective learning support tools, rather than as distractions that detract from the quality of students' learning.

The synthesis of previous research shows that gadget dependency in learning in the digital age is a multidimensional phenomenon involving academic, psychological, social, and pedagogical aspects. Gadget dependency cannot be resolved through a single approach but requires collaborative efforts from various parties. Universities need to formulate digital literacy policies and programs that emphasize the ethical and responsible use of technology. Students need to be equipped with a critical awareness of the impact of gadget use on their learning quality and personal development. With a comprehensive and sustainable approach, the phenomenon of gadget dependency can be minimized, so that learning in the digital era can truly improve the quality of higher education and produce graduates who excel academically and with character.

DISCUSSION

The findings of the present study indicate that gadget dependence among university students has a significant impact on learning in the digital era. This dependence is consistently associated with declines in academic performance, learning motivation, and academic engagement, as well as related issues such as academic procrastination, poor sleep quality, and ineffective time management. Saprila (2024) reported that *smartphone addiction* negatively affects *academic achievement* among university students in the Greater Jakarta area, reinforcing the conclusion that excessive gadget use can directly reduce academic outcomes at the higher education level. These findings align with broader international evidence highlighting the detrimental effects of uncontrolled smartphone use on students' learning processes.

From a theoretical perspective, Cognitive Load Theory provides a strong explanatory framework for this phenomenon. Excessive gadget use divides students' attention and increases *extraneous cognitive load*, thereby reducing their capacity to process academic information effectively. Meta-analytic studies have confirmed that problematic smartphone use has a negative effect on learning outcomes and academic performance. In addition, Self-Regulation Theory suggests that students who lack the ability to regulate their gadget use experience greater difficulties in maintaining focus, motivation, and persistence in learning

tasks. Thus, gadget dependence can be understood as both a cognitive and behavioral challenge within digital learning environments.

In addition to academic performance, learning motivation emerges as a critical variable affected by gadget dependence. Several studies indicate that excessive smartphone use significantly reduces students' intrinsic motivation to learn. Sanatang et al. (2025) found that smartphone addiction has a significant negative effect on university students' learning motivation, which in turn diminishes their engagement in academic activities. Similar findings were reported by Riskiana et al. (2024), who observed that gadget addiction reduces students' interest, persistence, and responsibility in learning tasks. These results are consistent with motivational theories emphasizing the importance of sustained attention and goal orientation in effective learning.

Sleep quality has also been identified as a mediating factor between gadget use and learning motivation. Pebriani and Marleni (2025) demonstrated that high smartphone usage intensity negatively affects students' sleep quality, which subsequently reduces motivation and cognitive readiness for learning. This finding aligns with Sleep Deprivation Theory, which explains that insufficient or poor-quality sleep impairs cognitive functioning, emotional regulation, and learning capacity. Consequently, gadget dependence indirectly undermines learning outcomes through physiological and psychological pathways.

From a behavioral perspective, gadget dependence is closely linked to academic procrastination. Studies indicate that students who primarily use gadgets for non-academic purposes—such as social media, gaming, and entertainment—are more likely to delay academic tasks. Nakhma'ussolikhah et al. (2024) found that excessive smartphone use significantly predicts academic procrastination among university students. Similarly, Abd. Rasyid et al. (2025) reported that online gaming behavior is associated with higher levels of procrastination, further exacerbating learning difficulties. These findings support behavioral theories suggesting that instant gratification from digital media competes with long-term academic goals.

Social and collaborative aspects of learning are also affected by gadget dependence. Research has shown that students who are highly dependent on gadgets tend to prefer virtual interactions over face-to-face academic discussions, leading to reduced quality of collaboration and peer engagement. Although some studies focus on secondary education, their findings are transferable to higher education contexts, indicating that smartphone addiction negatively influences group engagement and collaborative learning. This underscores the broader social implications of gadget dependence beyond individual academic outcomes.

Importantly, not all studies portray gadget use as inherently detrimental. Recent research highlights that smartphone self-efficacy and purposeful academic use can positively influence learning outcomes when gadget use is well-regulated. Akuratiya (2024) found that smartphone competence, self-efficacy, and positive behavioral intentions are associated with improved academic performance. These findings are consistent with the Technology Acceptance Model (TAM), which emphasizes that perceived usefulness and ease of use determine whether technology enhances or hinders learning.

Furthermore, Dual Systems Theory and contemporary digital behavior research suggest that persuasive application design can reinforce addictive usage patterns, thereby weakening self-control mechanisms. Chen et al. (2021) demonstrated that persuasive design features in mobile applications are significantly associated with problematic smartphone use. This indicates that gadget dependence is not solely an individual issue but also a structural and technological one.

Overall, the comparative analysis of the present findings with existing theories and empirical studies reveals that gadget dependence in digital learning contexts is a multidimensional phenomenon, involving cognitive, motivational, behavioral, and social factors. While excessive and uncontrolled gadget use poses significant risks to academic success, strategic and self-regulated use supported by appropriate pedagogical design can transform gadgets into effective learning tools. This synthesis contributes to the

development of a more integrative theoretical and methodological perspective on digital learning and gadget dependence in higher education.

CONCLUSION

Based on the results of the study and discussion of various previous studies, it can be concluded that gadget dependence in learning in the digital era among students is a real and growing phenomenon. Gadgets have become an integral part of students' academic activities, particularly in supporting digital learning. However, excessive and uncontrolled gadget use tends to have various negative impacts, including academic, psychological, and social aspects. Gadget dependence is associated with decreased concentration, learning motivation, productivity, and the quality of students' social interactions. Therefore, although gadgets have great potential as learning tools, poorly managed dependence can actually hinder the achievement of educational goals in higher education.

This study also shows that the phenomenon of gadget dependence is not solely caused by technological advances but is influenced by various other factors, such as low student self-control, less interactive learning designs, and a lack of digital literacy that emphasizes ethical and responsible technology use. Gadget dependence is a multidimensional issue that requires a comprehensive understanding and a holistic approach. Therefore, efforts to overcome gadget dependence cannot be undertaken in isolation but must involve the active participation of universities, lecturers, and students together.

Based on these findings, it is recommended that universities develop digital literacy policies and programs oriented towards the wise, productive, and ethical use of gadgets. Lecturers are expected to be able to design more interactive and meaningful learning by utilizing gadgets as supporting media, not just as a means of delivering material. Meanwhile, students need to be encouraged to increase their awareness and self-control in using gadgets, especially in the context of learning. Furthermore, further research is recommended to use an empirical approach through field studies to examine the phenomenon of gadget dependency in greater depth and context. With these steps, it is hoped that learning in the digital era can take place effectively and can improve the quality of higher education sustainably.

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