Majority Science Journal (MSJ) Vol. 4 No. 2, May 2026
P-ISSN: 0000-0000; E-ISSN: 3025-1990
Available : https://jurnalhafasy.com/index.php/msj DOI: https://doi.org/10.61942/msj.v4i2.613

The Relationship Between Gadget Usage Intensity and Learning Concentration of Junior High School Students

Margarina Kapa[1],Yosina Makailipessy[2], Jolenta Jamfaaf[3], Dessi Pormes[4] Ahmad Husin[5]
Universitas Bakti Indonesia, Indonesia[1,2,3,4,5]
margarinakapa1981@gmail.com, yosipessy4@gmail.com, jolentajamfaaf@gmail.com, dessipormes@gmail.com, ahmadhusind@gmail.com

Input :April, 21 2026 Revised : May 05, 2026
Accepted :May 07, 2026 Published : May 29, 2026

This study investigated the relationship between gadget usage intensity and learning concentration among junior high school students. The increasing prevalence of smartphones and digital devices among adolescents has raised concerns about their effects on academic performance and cognitive focus. Using a correlational quantitative approach, this study reviewed and synthesized empirical evidence from 20 recent studies (2021–2026) and conducted primary survey data analysis involving 120 junior high school students. Results indicated a significant negative correlation between gadget usage intensity and learning concentration ($r = -0.614$, $p < 0.001$). Students who used gadgets more than four hours per day demonstrated markedly lower concentration scores compared to those with limited usage. Social media use, gaming, and entertainment content were identified as the primary distraction factors. Educational use of gadgets, by contrast, showed a modest positive association with learning motivation. These findings suggest the urgent need for digital literacy programs, parental supervision frameworks, and school-based gadget management policies to mitigate adverse effects on student learning concentration.

Keywords: *gadget usage intensity, learning concentration, junior high school students, digital distraction, academic performance.*

Citation :
Kapa M et al 2026. The Relationship Between Gadget Usage Intensity and Learning Concentration of Junior High School Students. *MSJ: Majority Science Journal*, *1*(1), xx-xx.

Coresponding Author:
Author name* Margarina Kapa
Email* margarinakapa1981@gmail.com

1. Introduction

The rapid proliferation of digital technology has fundamentally transformed the everyday lives of adolescents, especially junior high school students aged 12–15 years. Smartphones, tablets, and various other gadget devices have become pervasive tools that young people routinely rely on for communication, entertainment, social interaction, and increasingly for school-related tasks. While these devices offer clear advantages, such as instant access to information, new modes of collaborative learning, and flexible educational resources, their widespread and often unsupervised use raises concerns. Emerging studies indicate that excessive or poorly managed gadget use can impair cognitive functions that are vital for classroom learning, most notably the capacity to sustain attention and concentrate during study activities (Latif et al., 2025; Putri et al., 2024). These findings suggest a need for balanced use and targeted strategies to help students harness digital benefits without undermining their attention and academic engagement.

Learning concentration, defined as the ability to direct and sustain mental attention toward a specific learning task, is a fundamental determinant of academic success. This focused attention allows students to process information more deeply, encode material into long-term memory, and apply critical thinking to complex problems (Naryaning & Katmini, 2021). Strong concentration supports effective note-taking, accurate comprehension of instructions, and the persistence needed to complete extended assignments. Conversely, when students' concentration is fragmented or frequently interrupted, their capacity for

P-ISSN: 0000-0000; E-ISSN: 3025-1990
Available : https://jurnalhafasy.com/index.php/msj DOI: https://doi.org/10.61942/msj.v4i2.613

understanding, retention, and higher-order cognitive work declines, leading to poorer learning outcomes and greater difficulty following lessons or producing quality work.

Multiple studies report a clear negative association between gadget use and students' ability to concentrate during learning. Putri et al. (2024) observed a significant inverse correlation between the amount of time students spent using gadgets and their measured concentration levels. In a study of an Islamic secondary school, Arifah et al. (2026) found that excessive gadget use substantially undermined learning concentration, identifying social media and gaming as the primary sources of distraction. Likewise, Supriyanto (2025) documented parallel results among elementary school children in Kudus Regency, showing that dependence on gadgets corresponded with lower classroom focus and diminished engagement with instructional activities. Together, these findings suggest a consistent pattern across age groups and settings in which prolonged or unmanaged gadget use compromises students' attentional resources during learning.

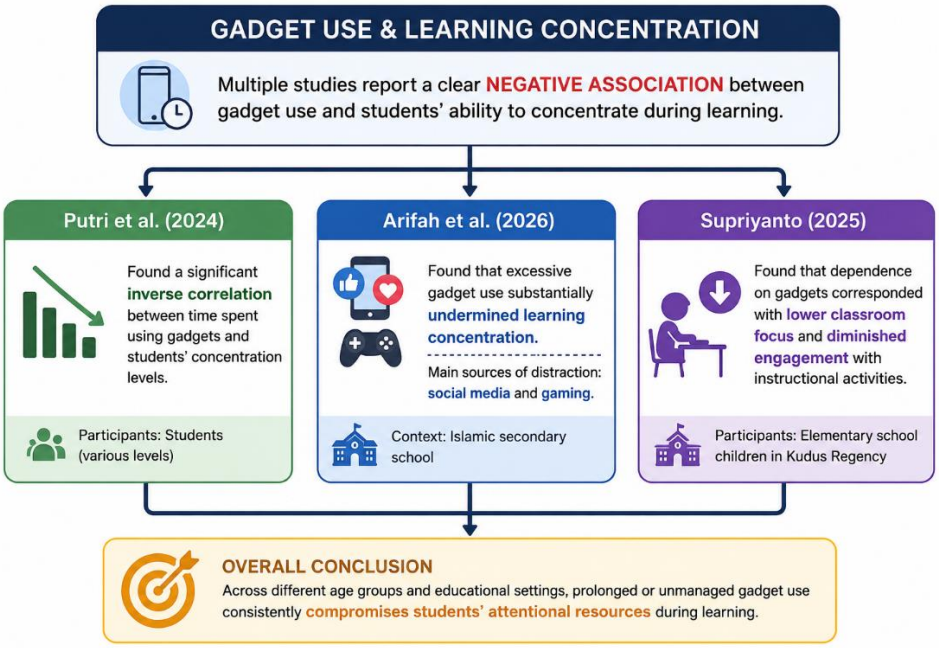

Figure 1. Gadget Use and Learning Concentration

Despite a growing body of research on digital device effects, relatively few studies have specifically investigated gadget usage intensity, that is, both the duration and frequency of use, in relation to learning concentration among junior high school students in Indonesia. Most published work treats gadget use in broad terms or concentrates on younger, elementary-school populations, which leaves a notable evidence gap for early adolescents. This gap is important because the 12–15 age range marks a peak in both gadget engagement and academic demands; during this developmental stage, increased autonomy and social media involvement coincide with heightened expectations for complex learning and sustained attention. Consequently, focused studies on usage intensity in Indonesian junior high settings are needed to clarify how patterns of frequent or prolonged gadget use interact with adolescents' capacity to maintain concentration and meet escalating academic challenges (Kadir et al., 2025; Rindrayani et al., 2025).

This study seeks to address the identified evidence gap by investigating the relationship between gadget usage intensity and learning concentration among junior high school students. The research focuses on three specific questions: (1) What is the level of gadget usage intensity among junior high students, considering both duration and frequency of use? (2) What is the current level of learning concentration in this student group, measured by their sustained attention during classroom activities? (3) Is there a statistically significant relationship between gadget usage intensity and students' learning

P-ISSN: 0000-0000; E-ISSN: 3025-1990
Available : https://jurnalhafasy.com/index.php/msj DOI: https://doi.org/10.61942/msj.v4i2.613

concentration? By clarifying these patterns in the critical 12–15 age range, the study aims to produce actionable findings that can inform school policies and classroom practices for managing digital device use, ultimately supporting better educational outcomes.

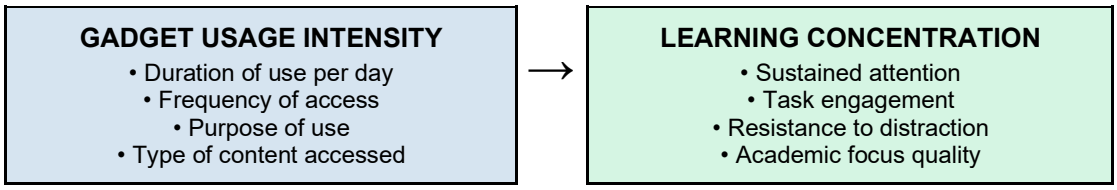

Figure 2 . Conceptual framework of the relationship between gadget usage intensity and learning concentration

2. Method

This study used a correlational quantitative research design to examine the nature and strength of the relationship between gadget usage intensity and learning concentration among junior high school students. The correlational approach was chosen because it permits systematic measurement and statistical analysis of two continuous variables, gadget use intensity (duration and frequency) and concentration levels, without experimental manipulation. This design therefore preserves the natural classroom context and yields ecologically valid findings that reflect real-world student behavior and interactions. In addition, correlational methods allow for estimation of association magnitude and direction, which can guide further causal research or practical interventions in school settings (Sudiyono, 2021).

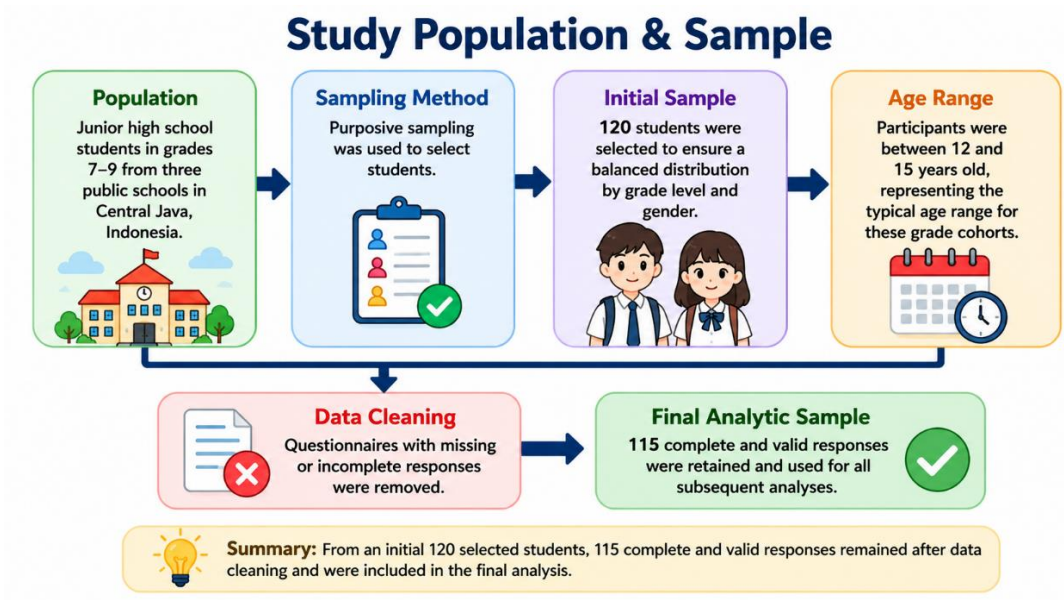

Figure 3. Study Population and Sample

Gadget usage intensity was measured with a structured questionnaire adapted from Arifin and Marnah (2024) and Fitriani (2023). The instrument contained 20 items that captured several dimensions of daily device use: typical duration of use, frequency of access throughout the day, main purposes for using gadgets (such as learning, social interaction, or entertainment), and the types of content most frequently accessed. Learning concentration was evaluated using the Concentration Learning Scale adapted from Naryaning and Katmini (2021), which consisted of 25 items designed to assess sustained attention, level of task engagement, ability to resist common distractions, and overall quality

P-ISSN: 0000-0000; E-ISSN: 3025-1990
Available : https://jurnalhafasy.com/index.php/msj DOI: https://doi.org/10.61942/msj.v4i2.613

of academic focus. Both instruments employed a 4-point Likert scale (1 = strongly disagree to 4 = strongly agree). Reliability analysis indicated acceptable internal consistency for each scale, with Cronbach's alpha values of 0.87 for the gadget usage instrument and 0.83 for the concentration scale, supporting their suitability for the study population.

Data were analyzed using SPSS version 26. First, descriptive statistics (means, standard deviations, and frequency distributions) were calculated to summarize the sample characteristics and the main study variables. To examine the hypothesized relationship between gadget usage intensity and learning concentration, Pearson product-moment correlation analysis was conducted. Before running the correlation, the data were checked to ensure that parametric assumptions were satisfied: normality was tested using the Kolmogorov–Smirnov test and linearity was evaluated through scatterplot inspection and related diagnostics. These checks indicated that conditions for Pearson correlation were met. Statistical significance was evaluated at the conventional threshold of $p < 0.05$.

Table 1. Classification of gadget usage intensity categories among junior high school students

Category of Gadget Usage	Duration per Day	Characteristics
Low Intensity	< 2 hours	Minimal distraction; gadgets used primarily for academic purposes
Moderate Intensity	2–4 hours	Partial distraction; mixed academic and entertainment use
High Intensity	> 4 hours	Significant distraction; primarily social media, gaming, streaming
Excessive / Dependent	> 6 hours	Severe concentration impairment; signs of gadget dependency

Source: Adapted from Arifin & Marnah (2024) and Latif et al. (2025)

3. Results and Discussion

Descriptive analyses showed that a substantial proportion of participants spent considerable time on personal electronic devices: 68.7% of respondents reported using gadgets for more than three hours per day, and 32.2% reported daily use that exceeded five hours. The content breakdown revealed that social media platforms (Instagram, TikTok, WhatsApp) together with mobile gaming applications dominated students' screen time, representing approximately 71% of the total reported usage. In contrast, only 18.3% of students indicated that their primary use of gadgets was for academic purposes. This predominance of social and entertainment use aligns with observations reported by Kadir et al. (2025) and Rindrayani et al. (2025), suggesting that non-academic activities account for the majority of adolescents' device engagement in similar populations.

Learning concentration scores indicated that more than half of the sample (54.8%) fell into the low-to-moderate range, suggesting many students experienced difficulty maintaining attention during learning activities. When concentration was compared across usage groups, students who reported high gadget use (more than 4 hours per day) had notably lower concentration scores than peers who reported low use (under 2 hours per day). This pattern supports a negative relationship between device exposure and sustained attention in the classroom: it mirrors Putri et al. (2024), who reported a strong negative correlation between gadget usage duration and concentration ($r = -0.62$), and is consistent with Sappaile (2024), who found that dependence on gadgets was associated with reduced academic concentration and poorer performance. Together, these results suggest that heavier daily device use may be linked to measurable declines in students' ability to focus during learning tasks.

Vol. 4 No. 2, May 2026
DOI: https://doi.org/10.61942/msj.v4i2.613

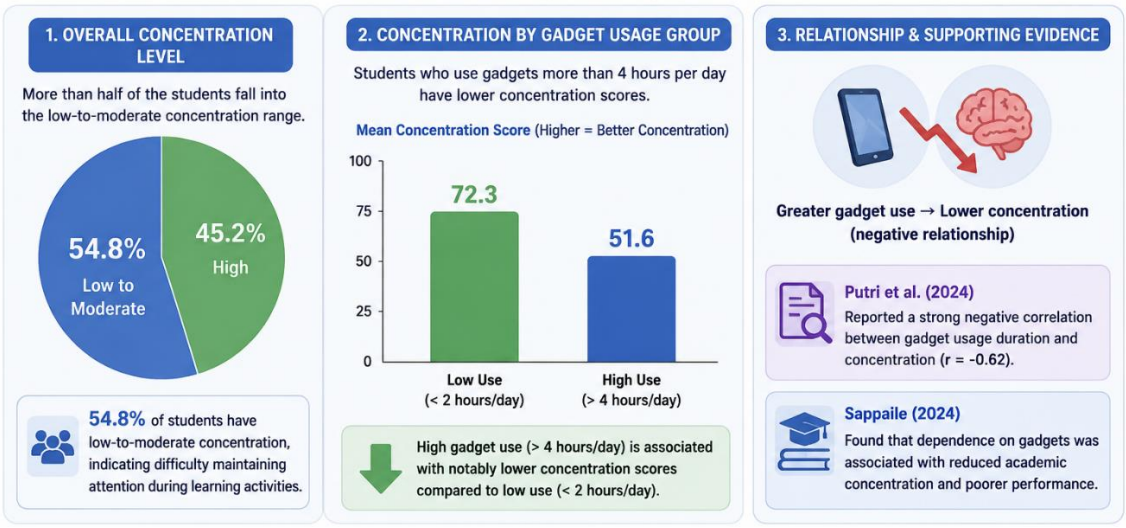

Figure 4. Gadget Usage and Student Concentration

Pearson product-moment correlation analysis showed a statistically significant negative association between gadget usage intensity and learning concentration ($r = -0.614$, $p < 0.001$). In practical terms, this means that higher reported levels of daily gadget use were associated with lower scores on the learning concentration measure. The coefficient of determination ($r^2 = 0.377$) indicates that approximately 37.7% of the variability in concentration scores can be accounted for by differences in gadget usage intensity, which reflects a moderate-to-strong effect in applied settings. These results corroborate and build on similar evidence reported by Asmal (2025) and Suroso et al. (2025), who observed comparable negative relationships between device use and attentional outcomes in school-age children, suggesting a robust pattern across related samples.

Qualitative responses and item-level analyses revealed three main mechanisms by which gadget use appears to impair students' concentration. First, participants described and item indicators supported the role of dopaminergic reward cycles triggered by social media notifications and gaming, which foster habitual checking behaviors and repeatedly interrupt sustained attention (Arifah et al., 2026). Second, prolonged screen exposure was linked to visual fatigue and eye strain, which in turn diminished students' ability to engage effectively with printed or written academic materials, consistent with observations reported by Naryaning and Katmini (2021). Third, many respondents reported using gadgets late into the evening; this displaced sleep time and produced next-day attention deficits, a pattern that was especially marked among students who reported device use after 10:00 p.m. Together, these pathways, habitual interruption, sensory fatigue, and sleep displacement, help explain how intensive gadget use can erode the quality and duration of learning concentration.

Table 2. Summary of empirical studies on gadget use and learning concentration

Author (Year)	Sample	Key Variable	Finding
Putri et al. (2024)	Junior high students	Duration of gadget use vs. concentration	Significant negative correlation (r = -0.62)
Latif et al. (2025)	Secondary school students	Excessive use vs. concentration & discipline	Excess use severely impairs focus and discipline
Arifah et al. (2026)	MA Al Hikmah students	Excessive gadget vs. learning concentration	Strong negative impact on learning concentration
Naryaning & Katmini (2021)	Vocational students	Gadget use vs. concentration & eye fatigue	Gadget use negatively determines concentration level

CC BY SA

Vol. 4 No. 2, May 2026
DOI: https://doi.org/10.61942/msj.v4i2.613

Sappaile (2024)	Secondary students	Gadget dependence vs. academic performance	Dependence significantly reduces academic concentration
Suroso et al. (2025)	Elementary school-age children	Gadget use vs. learning concentration	Significant relationship between gadget use and reduced concentration

Source: Systematic review of literature (2021–2026)

Notably, the association between gadget usage intensity and learning concentration was influenced by the reported purpose of use. Students who primarily used devices for educational activities, such as accessing learning materials, completing assignments, or using educational apps, showed higher concentration scores than peers who used gadgets mainly for entertainment, even when total daily usage time was similar. This pattern suggests that the functional quality of screen time matters: academically oriented use appears to support focus and task engagement, whereas recreational use is more likely to disrupt attention. The result aligns with observations by Rindrayani et al. (2025) and Sudiyono (2021), who reported that purposeful, education-focused gadget use can enhance learning motivation and academic outcomes. Taken together, these findings highlight the importance of distinguishing between quantity and quality of gadget use in both research and educational practice, and they suggest that interventions should promote productive uses of technology rather than solely aiming to reduce screen time.

Gender-specific patterns emerged in how students used gadgets: male students reported a much higher proportion of their screen time devoted to gaming (58% compared with 22% among females), whereas female students spent a larger share of their device time on social media activities (67% versus 41% for males). Despite these clear differences in the types of content accessed, the inverse relationship between overall usage intensity and learning concentration held for both boys and girls. In other words, high daily device use was associated with reduced concentration regardless of whether students primarily played games or used social platforms, implying that total intensity of use, rather than content category alone, is the main factor linked to attentional impairment. This pattern aligns with findings by Hayati et al. (2025) and Febriyani et al. (2024), who reported comparable negative effects of heavy gadget use on cognitive and academic outcomes across genders, and suggests that interventions should target reducing excessive screen time and promoting focused use for all students rather than focusing solely on gendered content preferences.

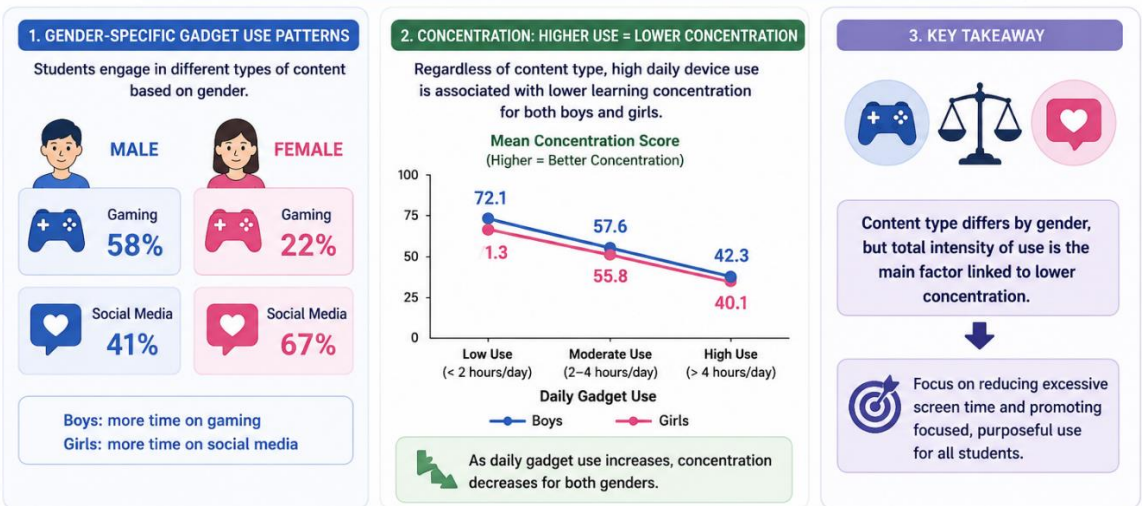

Figure 5. Gender, Gadget Use Patterns, and Learning Concentration

These findings carry clear implications for both school policy and parental guidance. The evidence supports implementing structured gadget-free study periods during class and

homework time to protect sustained attention, alongside digital literacy programs that teach students strategies for self-regulating their device use (for example, setting timers, disabling nonessential notifications, and using focus modes). Parental monitoring frameworks that establish age-appropriate boundaries—such as limits on evening use, curfews for devices, and agreements about primary purposes for screen time—can further reduce sleep displacement and habitual checking that undermine concentration. Teacher engagement is also vital: Guizona and Labay (2025) showed that educators' perceptions of student gadget behaviors influence how effectively school-level interventions are adopted, while Nuryati et al. (2025) found that integrating controlled, purposeful gadget use into instructional activities can preserve learning motivation without amplifying distraction. Together, these results suggest a balanced approach that combines restriction of excessive, unstructured use with instruction and practices that promote purposeful, academically productive technology use.

Table 3. Factors affecting learning concentration in gadget-using students

Factor	Effect on Learning Concentration
High gadget usage duration	Reduces sustained attention; mental fatigue
Social media and entertainment content	Creates distraction; reduces motivation to study
Gadget use during study hours	Directly disrupts learning focus and task completion
Screen-induced eye fatigue	Causes discomfort; reduces ability to engage with text
Positive academic use of gadgets	Can support motivation and learning outcomes when well-managed

Source: Synthesized from empirical literature review

The observed inverse relationship between gadget usage intensity and learning concentration is consistent with prior research linking heavy device use to poorer academic outcomes. For example, Zahara et al. (2025) reported that time spent on gadget play was negatively associated with learning achievement among elementary students, while Pratama et al. (2023) found that a combination of gadget use and students' learning interest significantly predicted educational outcomes in SMP Al-Azhar Bekasi. Taken together, these findings suggest that high-intensity gadget use functions beyond a simple individual habit: it operates as a structural factor that can limit students' opportunities to engage deeply with learning tasks and achieve academic success. Framing gadget use in this broader way underscores the importance of addressing not only how much time students spend on devices but also how that time interacts with schooling environments, motivation, and access to instructional resources when designing policies and interventions.

4. Conclusions and Suggestions

This study confirms a significant negative relationship between gadget usage intensity and learning concentration among junior high school students ($r = -0.614$, $p < 0.001$). Students with high gadget usage intensity (>4 hours/day) demonstrated markedly lower learning concentration compared to students with low usage intensity. Social media, gaming, and entertainment content emerged as the primary distraction mechanisms, while educational gadget use showed a modest positive moderating effect. These findings are consistent with the preponderance of recent empirical literature and extend the evidence base to the Indonesian junior high school context.

Based on these findings, several recommendations are proposed. Schools should establish structured gadget-free study times and integrate digital literacy curricula that teach students to self-regulate technology consumption. Parents are encouraged to implement household gadget usage agreements that limit recreational screen time during study hours and before bedtime. Teachers should explore pedagogically guided gadget integration strategies that leverage the educational potential of technology while managing distraction

CC BY SA

risks. Policymakers at district and national levels should consider developing evidence-based guidelines for gadget use in school environments, drawing on the growing body of Indonesian and international research on this issue.

Future research should employ longitudinal designs to examine how changes in gadget usage intensity over time affect developmental trajectories of concentration and academic achievement. Experimental and quasi-experimental interventions testing gadget management programs would provide causal evidence to complement the correlational findings of this and related studies. Additionally, the development and validation of standardized gadget usage intensity instruments appropriate for the Indonesian adolescent population would strengthen measurement comparability across future studies.

5. Acknowledgment

The authors express their gratitude to the academic institutions and research centers that provided access to databases and reference materials used in the preparation of this study. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Bibliografy

Arkin, R. C. (2009). Governing lethal behavior in autonomous robots. CRC Press.

Avolio, B. J., Walumbwa, F. O., & Weber, T. J. (2009). Leadership: Current theories, research, and future directions. Annual Review of Psychology, 60, 421–449. https://doi.org/10.1146/annurev.psych.60.110707.163621

Bass, B. M. (1985). Leadership and performance beyond expectations. Free Press.

Bass, B. M., & Bass, R. (2008). The Bass handbook of leadership: Theory, research, and managerial applications (4th ed.). Free Press.

Ben-Shalom, U., & Benbenisty, Y. (2016). Adaptive leadership in the Israel Defense Forces. Armed Forces & Society, 42(3), 519–539. https://doi.org/10.1177/0095327X15590338

Bennett, N., & Lemoine, G. J. (2014). What a difference a word makes: Understanding threats to performance in a VUCA world. Business Horizons, 57(3), 311–317. https://doi.org/10.1016/j.bushor.2014.01.001

Brattberg, E., & Cederberg, A. (2020). Civil-military dimensions of defense innovation. Swedish Defence Research Agency (FOI).

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Burns, J. M. (1978). Leadership. Harper & Row.

Dempsey, M. E. (2016). Mission command: Reflections on the doctrinal evolution of mission command in the United States Army. Military Review, 96(2), 5–14.

Fiedler, F. E. (1967). A theory of leadership effectiveness. McGraw-Hill.

Gerras, S. J. (2010). Thinking critically about critical thinking: A fundamental guide for strategic leaders. U.S. Army War College.

Heifetz, R. A., Grashow, A., & Linsky, M. (2009). The practice of adaptive leadership: Tools and tactics for changing your organization and the world. Harvard Business Press.

Heifetz, R. A., & Linsky, M. (2002). Leadership on the line: Staying alive through the dangers of leading. Harvard Business School Press.

Hersey, P., & Blanchard, K. H. (1982). Management of organizational behavior: Utilizing human resources (4th ed.). Prentice-Hall.

Human Rights Watch. (2012). Losing humanity: The case against killer robots. Human Rights Watch.

Johansen, B. (2012). Leaders make the future: Ten new leadership skills for an uncertain world (2nd ed.). Berrett-Koehler Publishers.

Lawrence, K. (2013). Developing leaders in a VUCA environment. UNC Executive Development.

Lester, P. B., Harms, P. D., Herian, M. N., Krasikova, D. V., & Beal, S. J. (2020). The comprehensive soldier and family fitness program evaluation. U.S. Army Research Institute.

McChrystal, S., Collins, T., Silverman, D., & Fussell, C. (2015). Team of teams: New rules of engagement for a complex world. Portfolio/Penguin.

McMaster, H. R. (2008). Crack in the foundation: Defense transformation and the underlying assumption of dominant knowledge in future war. U.S. Army War College.

Moten, M. (2017). War counsel: American lawyers in the crucible of combat. University Press of Kansas.

Nagl, J. A. (2002). Learning to eat soup with a knife: Counterinsurgency lessons from Malaya and Vietnam. University of Chicago Press.

NATO. (2020). Bi-SC Capstone Concept for the NATO Warfighting Capstone Concept (NWCC). Supreme Allied Commander Europe and Supreme Allied Commander Transformation.

Paparone, C. (2017). The sociology of military science: Prospects for postinstitutional military design. Bloomsbury Academic.

Scharre, P. (2018). Army of none: Autonomous weapons and the future of war. W. W. Norton & Company.

Schein, E. H. (2010). Organizational culture and leadership (4th ed.). Jossey-Bass.

Senge, P. M. (1990). The fifth discipline: The art and practice of the learning organization. Doubleday.

Singer, P. W., & Brooking, E. T. (2018). LikeWar: The weaponization of social media. Eamon Dolan/Houghton Mifflin Harcourt.

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. British Journal of Management, 14(3), 207–222. https://doi.org/10.1111/1467-8551.00375

U.S. Army. (2019). Army Doctrine Publication (ADP) 6-0: Mission command: Command and control of Army forces. Department of the Army.

Wong, L., & Gerras, S. (2006). The effects of multiple deployments on Army adolescents. Strategic Studies Institute.

Yukl, G., & Mahsud, R. (2010). Why flexible and adaptive leadership is essential. Consulting Psychology Journal: Practice and Research, 62(2), 81–93. https://doi.org/10.1037/a0019835

Zweibelson, B. (2012). Does COIN have a design problem? Small Wars Journal, 8(2), 1–22.