OPEN ACCESS

Original Article

Association of gadget use with learning focus and interpersonal skills among school-age children: A cross-sectional study

Peni Setiawati[1], Ranida Arsi[2*], Yazika Rimbawati[3]

[1] Program Studi Ilmu Keperawatan, Universitas Kader Bangsa Palembang, Indonesia
[2] Program Studi Profesi Ners, Universitas Kader Bangsa Palembang, Indonesia
[3] Program Studi DIII Keperawatan, Universitas Kader Bangsa Palembang, Indonesia

*Corresponding Author:
Ranida Arsi
Program Studi Profesi Ners, Universitas Kader Bangsa Palembang, Indonesia
Email: arsiranida20@gmail.com

Abstract

Background: The increasing use of digital technology has expanded gadget exposure among school-age children, which may influence learning concentration and social interaction development in educational settings. Educational stakeholders therefore require empirical evidence to understand how gadget use relates to learning focus and interpersonal skills.

Objective: This study aimed to examine the association between gadget use, learning focus, and interpersonal skills among school-age children.

Methods: A quantitative cross-sectional correlational design was employed. The study involved 60 students in grades IV and V at MI Najahiyah Seberang Ulu 1, Palembang, Indonesia, selected through purposive sampling based on predefined inclusion criteria. Data were collected using structured questionnaires measuring gadget use, learning focus, and interpersonal skills. Descriptive statistics were used to summarize respondent characteristics, while Spearman's rho correlation test assessed associations between variables at a 95% confidence level.

Results: The findings showed a statistically significant association between gadget use and learning focus (p < 0.001; r = 0.792) as well as between gadget use and interpersonal skills (p < 0.001; r = 0.764). Most respondents demonstrated moderate gadget use, generally high learning focus, and predominantly good interpersonal skills. These results indicate that variations in gadget use levels are closely related to differences in cognitive concentration and social interaction abilities among school-age children.

Conclusion: Gadget use shows a significant association with learning focus and interpersonal skills among school-age children. Balanced and supervised gadget use is essential to support optimal academic engagement and social development.

Background

Digital technology has expanded rapidly in children's daily lives, and global health systems recognize digital health as an integral part of modern health and education environments (World Health Organization, 2020). Researchers report increased mobile phone use among students as a social concern related to behavioral dependence and social adaptation challenges (Armakolas et al., 2024). Scholars describe digital location tracking practices as part of broader digital engagement affecting children's developmental contexts and behavioral monitoring patterns (Davis et al., 2024). Evidence shows that social media exposure influences adolescent psychological well-being through cognitive and emotional pathways (Dharejo et al., 2023). Studies demonstrate that mobile device exposure may affect children's mental health through behavioral, emotional, and environmental mechanisms (Girela-Serrano et al., 2022). National health authorities emphasize the importance of monitoring gadget use to prevent developmental and health problems among children (Kemenkes RI, 2024).

Educational researchers explain that gadget use supports learning activities through digital media interaction and educational game applications (Fatmayanti & Khaerati, 2024). Scholars report that video-based digital platforms influence interpersonal communication patterns among elementary school students (Fazilla & Sari, 2022). Linguistic studies show that digital messaging platforms shape communication styles and peer interaction among adolescents (Gómez-Camacho et al., 2023). Community education programs demonstrate positive outcomes when educators guide constructive gadget use among school-age children (Mertika et al., 2024). Experimental educational studies indicate that interactive digital applications support language development and socio-emotional skills in early learners (Suhartinah & Budiarti, 2024). These findings suggest that digital

technology may facilitate educational engagement when appropriate supervision and instructional strategies exist (Olson et al., 2022).

However, several studies identify negative consequences of excessive gadget exposure on children's cognitive performance and academic engagement. Researchers report that smartphone addiction correlates with sleep disturbances and depressive symptoms that may indirectly affect learning concentration (Liu & Lu, 2022). Educational studies show that smartphone use significantly influences students' learning concentration in formal classroom settings (Zulfa & Mujazi, 2022). National research demonstrates a relationship between gadget use and learning concentration among upper elementary school students (Putra, 2024). Behavioral studies indicate that gadget use intensity influences emotional regulation abilities in school-age children (Yusup & Wati, 2024). Psychosocial modeling research highlights the importance of emotional regulation mechanisms in behavioral adaptation processes (Ghobadi et al., 2021). These patterns indicate that uncontrolled gadget use may disrupt children's cognitive focus and emotional stability.

Beyond cognitive effects, scholars emphasize the role of digital technology in shaping children's interpersonal relationships. Educational research reports that gadget exposure influences social interaction patterns among elementary school students (Perangin Angin & Dafit, 2025). Psychological studies demonstrate that digital engagement may influence social behavior through emotional regulation pathways (Yusup & Wati, 2024). Communication research shows that media exposure shapes interpersonal communication competence among school children (Fazilla & Sari, 2022). Digital language studies describe technology-mediated communication as a dominant form of adolescent social interaction (Gómez-Camacho et al., 2023). Community education interventions reveal that guided gadget use supports positive social adaptation outcomes (Mertika et al., 2024). These findings indicate that gadget use may simultaneously enhance or hinder interpersonal skills depending on usage patterns.

Recent studies increasingly adopt cross-sectional approaches to examine behavioral and health correlations among school populations. Public health research demonstrates that cross-sectional designs effectively explore associations between behavioral variables and health outcomes among adolescents (Amelia & Harto, 2025). Researchers highlight the importance of examining digital behavior patterns within educational contexts to understand learning outcomes and social functioning (Armakolas et al., 2024). Mental health reviews emphasize that digital exposure requires multidimensional assessment including cognitive, emotional, and social domains (Girela-Serrano et al., 2022). Digital health frameworks recommend integrated monitoring of technology use to support healthy child development (World Health Organization, 2020). Educational studies underscore the need for empirical evidence linking gadget use with both academic focus and interpersonal competence (Putra, 2024). These perspectives justify further investigation using structured epidemiological designs.

Based on the growing digital exposure among children and the mixed findings regarding its educational and social impact, empirical research remains necessary to clarify these associations. Prior studies separately examine mental health, concentration, communication, or social interaction without integrating these variables in one analytical model (Dharejo et al., 2023). Educational research indicates inconsistent conclusions regarding whether gadget use supports or disrupts learning processes among school-age populations (Fatmayanti & Khaerati, 2024). Behavioral studies emphasize the importance of emotional and interpersonal dimensions in children's digital experiences (Yusup & Wati, 2024). Health authorities recommend evidence-based strategies to guide safe digital engagement among children (Kemenkes RI, 2024).

Therefore, this study aims to examine the association of gadget use with learning focus and interpersonal skills among school-age children.

Methods

Study Design

This study applied a quantitative research approach using a descriptive correlational design to examine the association between gadget use, learning focus, and interpersonal

skills among school-age children. Quantitative methods were selected because the study involved numerical data measured through structured questionnaires and analyzed statistically to address the research objectives. A descriptive correlational approach was considered appropriate because the study aimed to identify the magnitude and direction of relationships among variables without implementing experimental manipulation. The research specifically focused on students in grades IV and V at MI Najahiyah Seberang Ulu 1, Palembang City, Indonesia, in 2025. The study design followed the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guideline from the EQUATOR Network, which provides reporting standards for cross-sectional observational studies to ensure transparency, methodological rigor, and reproducibility. This guideline was adopted to strengthen study reporting quality, enhance clarity in methodology description, and facilitate interpretation of findings in observational research contexts.

Sampling

The study population consisted of all fourth- and fifth-grade students enrolled at MI Najahiyah Seberang Ulu 1, Palembang City, totaling 148 students. The sampling method used was purposive sampling, which allowed the researcher to select participants based on predefined inclusion criteria relevant to the research objectives. The sample size was determined using the Slovin formula to obtain a representative subset of participants while maintaining feasibility in data collection, resulting in a final sample of 60 respondents. Inclusion criteria included students actively enrolled in grades IV and V, students capable of operating gadgets independently, students who reported using gadgets for at least one hour per day, students with generally good physical health, and students willing to complete the questionnaire. Exclusion criteria included students with developmental disorders or specific medical conditions reported by teachers, students who did not complete the questionnaire fully, students with poor school attendance or frequent absenteeism, students with significant visual or hearing impairments

that could affect questionnaire comprehension, and students who had only recently begun using gadgets within the previous month. Purposive sampling enabled the collection of data from participants who possessed relevant characteristics; however, this approach also limited the generalizability of findings to populations with similar characteristics.

Instruments

Data were collected using structured self-administered questionnaires consisting of three main instruments: gadget use, learning focus, and interpersonal skills. The gadget use questionnaire included 15 items measuring frequency, duration, application type, and purpose of gadget usage, using a five-point Likert scale ranging from strongly disagree to strongly agree. The learning focus questionnaire consisted of 15 items designed to assess students' concentration during learning activities, perceived distractions, and study habits, also measured using a five-point Likert scale. The interpersonal skills questionnaire included 27 items assessing communication ability, teamwork capacity, and empathy toward peers, measured using a four-point Likert scale to encourage clear response differentiation. Score categorization into high, moderate, and low levels followed general health research methodological guidelines to ensure systematic interpretation. Instrument validity testing indicated that all gadget use questionnaire items exceeded the critical correlation coefficient threshold, confirming construct validity. Interpersonal skill items underwent similar validity evaluation, and non-valid items were removed before analysis. Reliability testing for the learning focus instrument yielded a Cronbach's alpha coefficient of 0.667, indicating acceptable internal consistency for exploratory educational research.

Data Collection

Data collection was conducted directly at MI Najahiyah Seberang Ulu 1, Palembang City, after obtaining institutional permission from the school administration. Questionnaires were distributed to eligible students during school hours in a supervised classroom setting. The researcher and classroom teachers provided

structured assistance during questionnaire completion to ensure comprehension while avoiding response influence. Participants received standardized explanations regarding questionnaire instructions, confidentiality assurance, and voluntary participation before completing the survey. The supervised administration approach was implemented to minimize misunderstanding of questionnaire items, especially considering the developmental characteristics of school-age children. Students completed the questionnaires individually within an allocated time frame, and completed questionnaires were checked immediately for completeness to reduce missing data. This structured collection procedure aimed to maintain data accuracy, reliability, and internal validity.

Data Analysis

Data analysis was conducted using statistical software to generate descriptive and inferential statistics. Descriptive analysis included frequency distributions, percentages, means, and standard deviations to summarize respondent characteristics and variable distributions. Inferential analysis applied the Spearman's rho correlation test to examine associations between gadget use, learning focus, and interpersonal skills. This non-parametric test was selected because the data were ordinal in nature and did not meet normal distribution assumptions. The level of statistical significance was set at 95% confidence ($\alpha = 0.05$), meaning that a p-value below 0.05 indicated a statistically significant relationship between variables. The correlation coefficient was interpreted to determine both the direction and strength of associations. This analytical approach enabled comprehensive assessment of relationships among variables while maintaining methodological appropriateness for correlational research.

Ethical Consideration

Ethical approval was obtained prior to data collection from the relevant institutional ethics authority. Permission was also secured from the school administration to conduct research involving students. Participants and their parents or guardians received information regarding study objectives, procedures, confidentiality, and voluntary participation before data collection. Written informed consent was obtained from parents or guardians, while students provided assent to participate. Participant anonymity was ensured by assigning identification codes rather than using personal names. Data were stored securely and used solely for research purposes to maintain confidentiality. Participants retained the right to withdraw from the study at any stage without consequences. These ethical safeguards were implemented to protect participants' rights, ensure data confidentiality, and maintain adherence to ethical standards in research involving minors.

Results

Table 1 presents the demographic characteristics of respondents as well as the distribution of gadget use levels, learning focus, and interpersonal skills among school-age children included in this study. The table provides descriptive statistical information to illustrate participant profiles and the overall pattern of key study variables prior to correlation analysis.

The distribution of respondents by classroom showed that most participants were from class 4A (26.7%) and class 5A (25.0%), while the smallest proportions were observed in classes 5B and 5C (each 5.0%). The age distribution indicated that the majority of respondents were 11 years old (41.7%), followed by 10 years old (38.3%), suggesting that most participants were in middle childhood developmental stages relevant to formal academic learning. Gender distribution was relatively balanced, with slightly more females (51.7%) than males (48.3%).

Regarding gadget use, 35.0% of respondents reported low usage, 33.3% reported high usage, and 31.7% reported moderate usage, indicating relatively even distribution across usage levels. In terms of learning focus, more than half of the respondents (51.7%) demonstrated high learning focus, while 26.7% showed moderate focus and 21.7% showed low focus. These findings suggest that although gadget use was

prevalent, a substantial proportion of students maintained adequate concentration in learning activities.

Interpersonal skill assessment revealed that most respondents were categorized as having good interpersonal skills (56.7%), followed by fair interpersonal skills (41.7%), while only 1.7% demonstrated very good interpersonal skills and none were categorized as poor. This pattern indicates generally adequate social interaction abilities among participants despite varying levels of gadget exposure. Overall, the descriptive findings suggest heterogeneous patterns of gadget use among school-age children, accompanied by generally moderate to high levels of learning focus and interpersonal competence. These baseline characteristics provide an important context for subsequent analysis examining the association between gadget use, learning focus, and interpersonal skills.

Table 1. Demographic Characteristics, Gadget Use Level, Learning Focus, and Interpersonal Skills Among School-Age Children (n = 60)

Respondent Characteristics	Frequency (n)	Percentage (%)
Classroom		
4A	16	26,7%
4B	9	15,0%
4C	14	23,3%
5A	15	25,0%
5B	3	5,0%
5C	3	5,0%
Respondent Age		
9 years	4	6,7%
10 years	23	38,3%
11 years	25	41,7%
12 years	5	8,3%
13 years	3	5,0%
Gender		
Male	29	48,3%
Female	31	51,7%
Level of Gadget Use		
High	20	33,3%
Moderate	19	31,7%
Low	21	35,0%
Learning Focus Level		
High	31	51,7%
Moderate	16	26,7%
Low	13	21,7%
Interpersonal skill level		
Very good	1	1,7%
Good	34	56,7%
Fair	25	41,7%
Poor	0	0

Table 2 showed cross-tabulation analysis indicates a clear variation in learning focus across different levels of gadget use. All respondents categorized as having high gadget use demonstrated high learning focus (100%), while none fell into moderate or low focus categories. Among respondents with moderate gadget use, most exhibited moderate learning focus (52.6%), followed by a smaller proportion showing high focus, and none showing low focus. In contrast, respondents with low gadget use were predominantly distributed across low learning focus categories, with 21.7% categorized as having low focus.

The statistical analysis using Spearman's rho revealed a significant association between gadget use and learning focus ($p < 0.001$). The

correlation coefficient (r = 0.792) indicates a strong relationship between these variables. This result suggests that gadget use level is closely related to students' ability to maintain learning focus, although the direction and contextual interpretation require careful consideration within behavioral and educational frameworks.

Table 2. Association Between Gadget Use and Learning Focus Among School-Age Children (n = 60)

Gadget Use	Learning Focus						Total		p-value	r
	High		Moderate		Low					
	n	%	n	%	n	%	n	%		
High	20	100	0	0	0	0	20	100	0.000	0.792
Moderate	9	9.5	10	52.6	0	61.9	19	100		
Low	2	51.7	6	28.6	13	21.7	21	100		

Table 3. Association Between Gadget Use and Interpersonal Skills Among School-Age Children (n = 60)

Gadget Use	Interpersonal Skill								Total		p-value	r
	Very good		Good		Fair		Poor					
	n	%	n	%	n	%	n	%	n	%		
High	1	5.0	19	0	0	0	0	0	20	100	0.000	0.764
Moderate	0	47.4	13	52.6	6	61.9	0	0	19	100		
Low	0	9.5	2	28.6	19	21.7	0	0	21	100		

Table 3 showed cross-tabulation analysis demonstrates variation in interpersonal skill levels across different categories of gadget use among school-age children. Respondents categorized with high gadget use were predominantly classified as having good interpersonal skills, with only a very small proportion categorized as very good and none categorized as fair or poor.

Among respondents with moderate gadget use, most exhibited good interpersonal skills, followed by a notable proportion categorized as fair interpersonal skills. In contrast, respondents with low gadget use were largely distributed in the fair interpersonal skill category, with fewer participants demonstrating good interpersonal competence.

The Spearman correlation analysis indicated a statistically significant association between gadget use and interpersonal skills (p < 0.001). The correlation coefficient (r = 0.764) suggests a strong relationship between the level of gadget use and interpersonal skill development among school-age children. This finding indicates that variations in gadget use intensity are closely related to differences in children's social interaction abilities.

Discussion

This study identified a significant association between gadget use, learning focus, and interpersonal skills among school-age children in the observed educational setting. The findings indicated that higher levels of gadget exposure corresponded with variations in students' learning concentration patterns (Putra, 2024). The results also showed that gadget use correlated with interpersonal skill levels among children in formal schooling environments (Perangin Angin & Dafit, 2025). Statistical analysis confirmed strong correlations between gadget use and both cognitive and social variables in this population (Amelia & Harto, 2025). These findings support previous evidence suggesting that digital engagement influences psychological, educational, and social development in children (Girela-Serrano et al., 2022). Therefore, understanding gadget use patterns becomes essential for evaluating learning behavior and social adaptation among school-age populations (World Health Organization, 2020).

Digital technology exposure affects children's cognitive processes through multiple behavioral and environmental pathways (Davis et al., 2024). Researchers explain that frequent mobile

phone use can shape attention patterns and behavioral regulation among students (Armakolas et al., 2024). Studies also demonstrate that social media interaction influences psychological well-being and cognitive engagement among adolescents (Dharejo et al., 2023). Evidence suggests that sleep disruption associated with mobile phone use may reduce students' concentration during academic activities (Liu & Lu, 2022). Educational research further indicates that smartphone use significantly affects learning focus among school-aged students (Zulfa & Mujazi, 2022). These mechanisms collectively explain how gadget exposure may influence academic concentration outcomes in children (Putra, 2024).

Educational environments increasingly integrate digital devices as learning tools that support instructional engagement (Fatmayanti & Khaerati, 2024). Teachers often use multimedia platforms to enhance students' communication skills and classroom participation (Fazilla & Sari, 2022). Interactive educational applications provide opportunities for language development and socio-emotional learning among children (Suhartinah & Budiarti, 2024). Structured digital interventions can improve cognitive engagement when educators provide adequate supervision (Mertika et al., 2024). Research also shows that digital technology can stimulate creativity and problem-solving skills in learning contexts (Olson et al., 2022). These perspectives suggest that gadget use may support learning focus when usage remains controlled and educationally oriented (World Health Organization, 2020).

Interpersonal skill development represents another important domain influenced by digital technology exposure (Perangin Angin & Dafit, 2025). Studies demonstrate that communication platforms shape interaction patterns among school-age children (Gómez-Camacho et al., 2023). Media exposure influences interpersonal communication competence through emotional regulation processes (Fazilla & Sari, 2022). Behavioral studies indicate that emotional regulation plays a central role in social adaptation among youth

(Ghobadi et al., 2021). Research also shows that gadget use intensity correlates with children's emotional control abilities (Yusup & Wati, 2024). These findings explain why digital engagement may affect interpersonal skills development among school-age populations (Girela-Serrano et al., 2022).

Psychosocial factors also contribute to the relationship between gadget use and children's social functioning (Dharejo et al., 2023). Mental health reviews report that excessive device use can influence emotional stability and social interaction capacity (Girela-Serrano et al., 2022). Behavioral dependence associated with smartphone use may reduce face-to-face social interaction opportunities (Armakolas et al., 2024). Educational psychology research emphasizes that emotional self-regulation influences interpersonal competence in children (Ghobadi et al., 2021). Public health perspectives highlight the importance of balanced digital exposure for healthy child development (World Health Organization, 2020). These explanations support the observed relationship between gadget use and interpersonal skill outcomes in this study (Perangin Angin & Dafit, 2025).

Cultural and contextual factors also influence how children interact with digital technology (Kemenkes RI, 2024). National health authorities emphasize monitoring gadget exposure to prevent developmental disturbances in children (Kemenkes RI, 2024). Educational environments shape students' digital literacy and responsible technology use behaviors (Fatmayanti & Khaerati, 2024). Community education programs demonstrate improved social outcomes when guided digital use is implemented (Mertika et al., 2024). Communication research highlights that digital language practices reflect evolving social interaction norms among adolescents (Gómez-Camacho et al., 2023). These contextual influences suggest that gadget use impacts children differently depending on supervision, environment, and educational support (World Health Organization, 2020).

Overall, the findings indicate that gadget use significantly relates to learning focus and

interpersonal skills among school-age children in this study (Putra, 2024). The results reinforce global evidence regarding the complex impact of digital technology on children's cognitive and social development (Girela-Serrano et al., 2022). Balanced gadget use appears essential to support academic performance and healthy social interaction among students (World Health Organization, 2020). Educational stakeholders should implement structured digital literacy programs to maximize benefits and reduce potential risks (Mertika et al., 2024). Parents and teachers should collaborate to supervise gadget use in both home and school environments (Kemenkes RI, 2024)..

Conclusion and Recommendation

The findings of this study indicate a significant association between gadget use, learning focus, and interpersonal skills among school-age children. The results suggest that variations in gadget use levels are related to differences in students' ability to maintain learning concentration and social interaction competence. Although digital technology provides opportunities for educational engagement and communication development, uncontrolled use may influence cognitive focus and interpersonal adaptation. Therefore, balanced and supervised gadget use is essential to support optimal academic performance and healthy social development in children. Schools, parents, and educators should collaborate to implement structured guidance, digital literacy education, and monitoring strategies to ensure responsible gadget use. Future research should explore broader populations and longitudinal designs to better understand causal relationships and long-term developmental impacts of gadget use among school-age children.

Acknowledgment

Funding Source

Declaration of conflict of interest
The authors declare no competing interests.

Declaration on the Use of AI
No AI tools were used in the preparation of this manuscript.

References

Armakolas, S., Lora, C., and Waligóra, A. (2024). Increased mobile phone use in high school students as a social problem under the dimension of addiction. Adv. Mob. Learn. Educ. Res. 4, 911–919. doi: 10.25082/AMLER.2024.01.002

Davis, I. S., Thornburg, M. A., Patel, H., and III Pelham, W. E. (2024). Digital Location Tracking of Children and Adolescents: A Theoretical Framework and Review. Clin Child Fam Psychol Rev 27, 943–965. doi: 10.1007/s10567-024-00500-

Dharejo, N., Alivi, M. A., Rahamad, M. S., Jiaqing, X., and Brony, M. (2023). Effects of social media use on adolescent psychological well-being: a systematic literature review. Int. J. Interact. Mob. Technol. 17, 171–191. doi: 10.3991/ijim.v17i20.44663

Fatmayanti, A., & Khaerati, A. (2024). Penggunaan gadget sebagai media permainan edukatif terhadap perkembangan sosial anak sekolah dasar (SD). Jurnal Review Pendidikan dan Pengajaran, 7(3), 7852–7853. http://journal.universitaspahlawan.ac.id/index.php/jrpp

Fazilla, S., & Sari, D. D. (2022). Pengaruh media YouTube terhadap komunikasi interpersonal siswa sekolah dasar IT Bunayya Kota Lhokseumawe. Jurnal Teknologi Pendidikan, 15(1).

Ghobadi, M., Moradi, O., Yarahmadi, Y., and Ahmadian, H. (2021). Structural equation modeling of marital boredom based on resilience through emotional selfregulation. Razavi Int. J. Med. 9, 55–59. doi: 10.30483/rijm.2021.254265.1103

Girela-Serrano, B. M., Spiers, A. D., Ruotong, L., Gangadia, S., Toledano, M. B., and Di Simplicio, M. (2022). Impact of mobile phones and wireless devices use on children and adolescents' mental health: a systematic review. Eur. Child Adolesc. Psychiatry 33, 1621–1651. doi: 10.1007/s00787-022-02012-8

Gómez-Camacho, A., Núñez-Román, F., Llorent-Vaquero, M., and Villaciervos-Moreno, P. (2023). Ke dise, mi Arma? Dialectal varieties in WhatsApp are the digital norm of Andalusian adolescent speakers. Languages 8:94. doi: 10.3390/languages8020094

Kemenkes RI. (2024). Webinar Dampak Gadget terhadap Kesehatan Tumbuh Kembang Anak dan Cara Mengatasinya dalam Rangka HKN ke-60 Tahun 2024. https://lms.kemkes.go.id/courses/f547e49d-f1ff-4b49-bbbd-37f2b537da47

Liu, M., and Lu, C. (2022). Mobile phone addiction and depressive symptoms among Chinese university students: the mediating role of sleep disturbances and the moderating role of gender. Front. Public Health 10:965135. doi: 10.3389/fpubh.2022.965135

Mertika, M., Marhayani, D. A., Karyadi, D., Wulandari, F., Suprapto, W., Hendriana, E. C., & Setyowati, R. (2024). Penyuluhan dampak positif penggunaan gadget bagi anak sekolah dasar. Jurnal Abdidas, 5(4), 319–325. https://doi.org/10.31004/abdidas.v5i4.954

Olson, J. A., Sandra, D. A., Langer, E. J., Raz, A., and Veissière, S. P. L. (2022). Creativity and smartphone use: three correlational studies. Int. J. Hum. Comput. Interact. 39, 2920–2925. doi: 10.1080/10447318.2022.2088451

Perangin Angin, M. A. B., & Dafit, F. (2025). Dampak penggunaan gadget terhadap interaksi sosial siswa kelas III SDN 009 Bina Baru Kabupaten Kampar. Jurnal Pendidikan Tambusai, 9(2), 20433–20441.

Putra, M. R. (2024). Hubungan Pengguna Gadget dengan Tingkat Konsentrasi Belajar pada Siswa Siswi Kelas 4-6 SD. Well Being, 9(2), 296–301.

Suhartinah, & Budiarti, E. (2024). Pengaruh aplikasi Wordwall terhadap perkembangan bahasa dan sosial emosional anak usia dini. Jurnal Studi Guru dan Pembelajaran, 7(2), 825. https://doi.org/10.30605/jsgp.7.2.2024.4414

Wiwiet Susan Amelia, & Harto, T. (2025). The correlation of knowledge and attitude on clean and healthy living practices in junior high school adolescents: A cross-sectional study. Lentera Perawat, 6(4), 739–749. https://doi.org/10.52235/lp.v6i4.626

World Health Organization. (2020). Digital Health. https://www.who.int/health-topics/digital-health

Yusup, R. M., & Wati, E. (2024). The effect of gadget use intensity on emotion regulation in elementary school-age children. Eduhealth Journal, 15(4), 1377–1384. https://doi.org/10.54209/eduhealth.v15i04

Zulfa, N. A., & Mujazi, M. (2022). Pengaruh Penggunaan Smartphone terhadap Konsentrasi Belajar Siswa. JRTI (Jurnal Riset Tindakan Indonesia), 7(4), 12–29. https://doi.org/10.29210/30032126000