

Reducing Excessive Gadget Use Among Pupils Through Parental Involvement and School-Based Interventions

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ABSTRACT

This study examined the effectiveness of the Family–School Digital Balance Program (F-SDBP) in addressing excessive gadget use and strengthening self-regulation among Grade 6 pupils. Guided by the Kemmis and McTaggart Plan–Act–Observe–Reflect framework, a participatory action research design with a mixed-method approach was employed, integrating pre-test and post-test survey measures with qualitative reflections. Baseline findings indicated that while daily gadget use was common, problematic behaviors were generally moderate. Post-intervention results revealed an unexpected increase in self-reported problematic gadget use behaviors, suggesting that the intervention may have heightened pupils' awareness and reporting of their digital habits rather than immediately reducing them. Despite this, significant improvements were observed in self-regulation, time management, and perceived parental and school guidance. Qualitative findings further indicated increased awareness, intentional screen use, and stronger family–school collaboration. These results suggest that while behavioral change may require longer intervention periods, coordinated family–school strategies can enhance awareness and self-regulatory capacities essential for sustainable digital balance.

Keywords: gadget use, parental involvement, self-regulation, digital balance

INTRODUCTION

The rapid propagation of digital devices has led to a considerable increase in gadget use among school-aged children, particularly in elementary and lower secondary levels. Gadgets such as smartphones, tablets, and computers have become integral to learning, communication, and entertainment; however, excessive and unsupervised use has emerged as a growing public health and educational concern (Musa et al., 2025). Recent global assessments indicate that a significant proportion of children exceed recommended daily screen time limits, with trends accelerating following increased dependence on digital technologies during and after the COVID-19 pandemic (Nagata et al., 2022). Prolonged gadget use among pupils has been associated with adverse outcomes, including reduced attention span, sleep disturbances, behavioral problems, decreased academic engagement, and limited social interaction (Eirich et al., 2022; Madigan et al., 2020).

While regulated and purposeful use of digital devices can reinforce learning, excessive gadget use beyond recommended limits may negatively affect pupils' cognitive, emotional, and behavioral development (Almeida & Peixoto, 2025). Empirical evidence suggests strong associations between high screen exposure and internalizing and externalizing behavior problems, particularly during the late elementary years among Grade 6 pupils when self-regulation skills are still rising (Eirich et al., 2022). Moreover, increased inactive behavior linked to excessive gadget use may displace time spent on physical activity, peer interaction, and academic tasks, further heightening its negative impact on pupils' overall well-being (Nagata et al., 2022).

Parents play a central role in modeling children's gadget use behaviors through role modeling, rule-setting, and supervision (Novianti et al., 2019). Parental attitudes toward technology, perceived benefits of gadget use, and self-efficacy in implementing screen time limits have been identified as significant predictors of children's digital habits (Mansor et al., 2021). However, many parents report difficulties in consistently monitoring gadget use due to work demands, limited digital literacy, or misconceptions regarding the educational value of prolonged screen exposure (Burhan et al., 2024; Hidayat & Listiawati, 2018). Without clear guidance and structured strategies, parental involvement alone may be insufficient to curb excessive gadget use among pupils.

Schools likewise serve as critical environments for developing healthy digital behaviors. School-based interventions that establish clear gadget policies, integrate digital literacy education, and provide opportunities for non-digital learning activities have shown promise in reducing screen dependence and improving students' classroom behavior (Žmavc et al., 2025). Importantly, evidence suggests that interventions linking parental involvement with school-based strategies are more effective than isolated efforts, as consistency between home and school environments reinforces behavior change (Cosso et al., 2022). Coordinated family–school approaches can support pupils in developing self-regulation skills while promoting shared responsibility among parents and educators (Gonzalez-DeHass, 2016; Hautakangas et al., 2022).

Despite growing evidence supporting combined parental and school-based interventions, there remains a need for context-specific action research that examines practical, low-cost strategies suitable for school communities. Many existing studies focus on preschoolers or rely on digital-only parental interventions, with limited emphasis on Grade 6 pupils' school experiences and daily classroom behaviors. Addressing this gap is essential, particularly in settings where gadget use has begun to interfere with pupils' academic engagement, discipline, and social development.

Therefore, this action research aims to design, implement, and evaluate a structured intervention that integrates parental involvement and school-based strategies to reduce excessive gadget use among Grade 6 pupils. By promoting consistent screen time rules, strengthening parent–teacher collaboration, and offering meaningful alternatives to gadget use in both home and school settings, this study seeks to contribute practical evidence on improving pupils' digital balance and overall learning behavior.

Statement of the Problem

This action research aims to determine the effectiveness of the Family–School Digital Balance Program (F-SDBP) in reducing excessive gadget use among Grade 6 pupils.

Specifically, it seeks to answer the following questions:

1. What is the level of gadget use behavior, self-regulation, and perceived parental and school guidance among Grade 6 pupils before the implementation of the F-SDBP?
2. Is there a significant difference in pupils' gadget use behavior, self-regulation, and perceived parental and school guidance after the implementation of the F-SDBP?
3. How does the integration of parental involvement and school-based strategies influence pupils' digital balance and classroom behavior?

Objectives of the Study

This study aims to evaluate the effectiveness of a structured family–school intervention in promoting responsible gadget use among Grade 6 pupils.

Specifically, it aims to:

1. Assess the baseline level of gadget use behavior, self-regulation, and parental and school guidance prior to the implementation of the F-SDBP.
2. Determine whether significant improvements occur in pupils' gadget use patterns and self-regulation after the intervention.
3. Examine the contribution of coordinated parental and school involvement in fostering sustainable digital balance among pupils.

METHODOLOGY

Research Design

This study employed a participatory action research design guided by the Kemmis and McTaggart cyclical framework of planning, action, observation, and reflection. Consistent with the structural organization of the

referenced action research manuscript, the present investigation implemented a structured intervention cycle through the Family–School Digital Balance Program (F-SDBP) to address excessive gadget use among Grade 6 pupils. During the planning phase, baseline assessment data were collected to determine pupils’ levels of gadget use behavior, self-regulation, and perceived parental and school guidance. These findings informed the development of context-responsive strategies, including structured screen-time agreements, parent orientation sessions, reinforcement of classroom gadget policies, and promotion of alternative non-digital learning activities. The action phase involved the systematic implementation of these strategies over a defined intervention period. In the observation phase, the teacher-researcher documented behavioral changes, compliance with established gadget-use guidelines, and classroom engagement patterns. The reflection phase entailed collaborative evaluation with participating parents and school administrators to assess the effectiveness of the intervention and identify areas for improvement, thereby ensuring iterative refinement consistent with action research principles.

Participants of the Study

A total of 115 Grade 6 pupils participated in this study, consisting of 48 males and 67 females aged between 11 and 12 years old. The research was conducted in a public elementary school in Mindanao during the Academic Year 2025–2026. Participants were Grade 6 pupils identified as exhibiting patterns of excessive or poorly regulated gadget use. A purposive sampling technique was utilized to select participants who met the following inclusion criteria: (1) officially enrolled in Grade 6, (2) with regular access to a smartphone, tablet, or computer at home, and (3) identified through teacher observation or parental report as exceeding recommended screen-time limits or demonstrating difficulty in regulating gadget use. Parents or guardians of selected pupils were included as collaborative partners in the intervention process. Ethical standards were rigorously observed throughout the study. Written informed consent was obtained from parents or guardians, and assent was secured from pupil participants. Confidentiality and anonymity were maintained through coded identifiers, and participants were informed of their right to withdraw at any time without academic penalty. Approval from the school head was obtained prior to data collection to ensure institutional and ethical compliance.

Data Collection and Extraction Procedures

Data collection employed a mixed-method approach to enable triangulation and strengthen the credibility of findings. Quantitative data were gathered using the *Pupil Gadget Use and Digital Balance Questionnaire (Pre-Test)*, which assesses three domains: gadget use behavior, self-regulation and awareness, and parental and school guidance. The instrument utilized a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). To establish content validity, the questionnaire underwent expert review by specialists in educational research and child development, and recommended revisions were incorporated prior to administration. A pilot test was conducted among non-participating pupils to assess clarity and internal consistency reliability. The same instrument was administered after the intervention to facilitate pre–post comparison. Qualitative data were obtained through structured classroom observations, parent feedback forms, and reflective field notes maintained by the teacher-researcher throughout the intervention cycle to document contextual and behavioral changes not fully reflected in quantitative scores.

Data Synthesis and Analysis

Quantitative data were analyzed using descriptive and inferential statistical techniques. Means, standard deviations, and frequency distributions were computed to describe baseline and post-intervention levels of gadget use behavior, self-regulation, and perceived guidance. A paired-sample t-test was conducted to determine whether statistically significant differences existed between pre-test and post-test scores across the three measured domains. Qualitative data from observations and parental feedback were analyzed using thematic analysis, involving systematic coding, categorization, and identification of recurring patterns aligned with the research objectives. Triangulation of quantitative and qualitative findings enhanced the internal validity and trustworthiness of the results. Through the integration of empirical analysis and cyclical reflection, the methodological framework ensured coherence between the study’s objectives and its aim of reducing excessive gadget use among Grade 6 pupils through structured parental involvement and school-based strategies.

Ethical Considerations

Ethical standards were strictly followed throughout the research process to safeguard the rights, dignity, and well-being of all participants. Prior to the implementation of the study, official permission was secured from the School Head of Mindanao State University–Integrated Laboratory School as well as from the Executive Committee for Research. These approvals ensured that the study complied with institutional policies and ethical guidelines.

Participation in the study was voluntary. Pupils were clearly informed about the purpose and procedures of the research using explanations appropriate to their level of understanding. They were assured that their involvement was not mandatory and that they could choose not to participate without any negative consequences.

Confidentiality and anonymity were also carefully maintained. The study did not collect any personal identifiers such as names or personal details that could reveal the identity of the participants. All information gathered was treated with strict confidentiality and used exclusively for academic and research purposes. The data were securely handled and reported only in summarized form to further protect participant privacy.

RESULTS

Table 1. Pre-Test and Post-Test of Gadget Use Behavior

Gadget Use Behavior Statement	Pre-Test Mean	Pre-Test SD	Pre-Test Interpretation	Post-Test Mean	Post-Test SD	Post-Test Interpretation
1. I use gadgets (cellphone, tablet, or computer) every day.	3.50	1.173	Moderate	4.00	1.177	Very High
2. I spend more time using gadgets than doing schoolwork or homework.	2.57	1.101	Moderate	3.93	1.299	Very High
3. I use gadgets even when I am already tired or sleepy.	2.37	1.181	Low	4.44	.892	High
4. I find it hard to stop using my gadget when I start playing or watching.	2.97	1.139	Moderate	4.33	.784	High
5. I use gadgets during meals or before sleeping.	2.83	1.244	Moderate	4.26	1.059	Very High
6. I use gadgets mostly for games or videos rather than learning.	2.52	1.134	Low	3.81	1.111	Very High
7. I feel bored or upset when I am not allowed to use my gadget.	2.77	1.178	Low	4.07	1.072	Very High
8. I forget time when I am using my gadget.	2.97	1.232	Moderate	4.22	.892	Very High
9. I prefer using gadgets instead of playing with friends.	2.33	1.233	Moderate	4.26	.712	Very High
10. I use gadgets even when there are other important things to do.	2.50	1.259	Low	4.37	.792	High

Note. Mean scores were interpreted using the following scale: 4.21–5.00 = Very High, 3.41–4.20 = High, 2.61–3.40 = Moderate, 1.81–2.60 = Low, and 1.00–1.80 = Very Low.

Table 1 presents the pre-test and post-test results on pupils’ gadget use behavior, indicating notable changes in reported usage patterns following the implementation of the Family–School Digital Balance Program (F-SDBP). During the pre-test phase, pupils generally exhibited low to moderate levels of problematic gadget use, with

mean scores ranging from 2.33 to 3.50, suggesting that while gadget use was common, problematic behaviors were not yet highly pronounced.

Following the intervention, all items increased to high or very high levels, with post-test mean scores ranging from 3.81 to 4.44. Since the statements describe problematic gadget use behaviors, these higher scores indicate more frequent or intensified engagement in such behaviors. For instance, using gadgets when tired increased from low ($M = 2.37, SD = 1.181$) to high ($M = 4.44, SD = 0.892$), while difficulty stopping gadget use increased from moderate ($M = 2.97, SD = 1.139$) to high ($M = 4.33, SD = 0.784$).

Overall, the results suggest that problematic gadget use behaviors did not decrease following the intervention and instead showed higher levels during the implementation period. This pattern indicates that while the program influenced pupils' awareness and self-regulatory capacities, immediate behavioral reduction in gadget use was not observed.

Table 2. Pre-Test and Post-Test of Self-Regulation and Awareness of Gadget Use

Self-Regulation and Awareness of Gadget Use Statement	Pre-Test Mean	Pre-Test SD	Pre-Test Interpretation	Post-Test Mean	Post-Test SD	Post-Test Interpretation
1. I know that using gadgets too much can affect my health.	4.17	1.123	High	4.33	.734	Very High
2. I know the right amount of time I should spend using gadgets.	3.93	.971	High	4.26	.859	Very High
3. I can control my gadget use when I need to study or rest.	4.10	.994	High	4.00	1.177	High
4. I can stop using my gadget when an adult tells me to do so.	3.95	1.138	High	4.00	1.177	High
5. I try to follow rules about gadget use at home or in school.	4.10	.959	High	4.37	.792	Very High
6. I choose other activities when I am told to limit gadget use.	4.19	.815	High	4.15	.949	High
7. I am aware when I am already using gadgets too much.	3.99	.932	High	4.07	.730	High
8. I can manage my time well even if I use gadgets.	3.90	1.000	High	4.15	.864	High
9. I understand the importance of balancing gadget use and schoolwork.	4.23	.841	Very High	4.19	.879	High
10. I am willing to reduce my gadget use if it helps me learn better.	4.08	1.027	High	4.41	.694	Very High

Note. Mean scores were interpreted using the following scale: 4.21–5.00 = Very High, 3.41–4.20 = High, 2.61–3.40 = Moderate, 1.81–2.60 = Low, and 1.00–1.80 = Very Low.

Table 2 presents the pre-test and post-test results on pupils' self-regulation and awareness of gadget use, showing overall strengthening of awareness and responsible digital attitudes after the implementation of the Family–School Digital Balance Program (F-SDBP). Prior to the intervention, pupils already demonstrated high levels of self-regulation and awareness, with mean scores ranging from 3.90 to 4.23, indicating that most pupils

recognized the importance of balanced gadget use and generally followed established rules. One item, “I understand the importance of balancing gadget use and schoolwork,” was already interpreted as very high ($M = 4.23$, $SD = 0.841$), suggesting strong baseline awareness of academic priorities despite varying levels of behavioral control.

After the intervention, several items improved to very high levels, particularly awareness of health effects ($M = 4.33$, $SD = 0.734$), understanding appropriate screen time limits ($M = 4.26$, $SD = 0.859$), adherence to rules at home or school ($M = 4.37$, $SD = 0.792$), and willingness to reduce gadget use for better learning ($M = 4.41$, $SD = 0.694$). While some items remained at the high level, such as controlling gadget use when studying ($M = 4.00$, $SD = 1.177$) and choosing alternative activities ($M = 4.15$, $SD = 0.949$), their consistently strong ratings indicate sustained self-regulatory behavior.

Overall, the results demonstrate that the intervention reinforced pupils’ awareness and strengthened their motivation to manage gadget use responsibly. The consistent movement from high to very high interpretations across key indicators suggests enhanced internalization of healthy digital habits and greater commitment to maintaining a balanced use of gadgets.

Table 3. Pre-Test and Post-Test of Parental and School Guidance on Gadget Use

Parental and School Guidance on Gadget Use Statement	Pre-Test Mean	Pre-Test SD	Pre-Test Interpretation	Post-Test Mean	Post-Test SD	Post-Test Interpretation
1. My parents set rules about how long I can use gadgets.	3.97	1.116	High	4.52	.643	Very High
2. My parents remind me to stop using gadgets when it is time to study.	4.48	.820	Very High	4.74	.447	Very High
3. My parents talk to me about proper gadget use.	4.24	.979	Very High	4.52	.893	Very High
4. My teachers remind us to limit gadget use in school.	4.23	.956	Very High	4.56	.847	Very High
5. Our school has rules about bringing and using gadgets.	4.29	1.114	Very High	4.33	1.074	Very High
6. My parents check what I watch or play on my gadget.	3.70	1.214	High	4.00	1.271	High
7. My teachers encourage activities that do not need gadgets.	4.12	.890	High	4.41	.747	Very High
8. I follow my parents’ rules about gadget use at home.	4.05	.999	High	4.63	.629	Very High
9. I follow school rules about gadget use.	4.17	.976	High	4.63	.492	Very High
10. Both my parents and teachers help me manage my gadget use.	4.16	1.081	High	4.70	.609	Very High

Note. Mean scores were interpreted using the following scale: 4.21–5.00 = Very High, 3.41–4.20 = High, 2.61–3.40 = Moderate, 1.81–2.60 = Low, and 1.00–1.80 = Very Low.

Table 3 presents the pre-test and post-test results on parental and school guidance regarding gadget use, demonstrating strengthened monitoring and rule enforcement after the implementation of the Family–School Digital Balance Program (F-SDBP). During the pre-test phase, most items were already interpreted as high to very high, with mean scores ranging from 3.70 to 4.48, indicating that pupils perceived strong involvement from both parents and teachers even before the intervention. Items such as parental reminders to stop using gadgets

for study ($M = 4.48$, $SD = 0.820$) and teacher reminders to limit gadget use in school ($M = 4.23$, $SD = 0.956$) were already at very high levels, reflecting established guidance structures.

Following the intervention, nearly all items increased to very high interpretations, with post-test means ranging from 4.00 to 4.74. Notable improvements were observed in parental rule-setting ($M = 4.52$, $SD = 0.643$), pupil compliance with parental rules ($M = 4.63$, $SD = 0.629$), and parental reminders for study time ($M = 4.70$, $SD = 0.609$), indicating enhanced consistency and reinforcement at home. Similarly, teacher encouragement of non-digital activities improved to a very high level ($M = 4.41$, $SD = 0.747$), suggesting strengthened school involvement.

Overall, the results highlight increased collaboration between parents and teachers, reinforcing structured guidance and shared responsibility in promoting responsible gadget use among pupils.

Qualitative Findings after Intervention

The qualitative data gathered from the open-ended post-test responses were analyzed using thematic analysis. Three major themes emerged from the participants' reflections, representing changes in gadget use behavior, development of self-regulation skills, and strengthened parental and school support after the implementation of the Family–School Digital Balance Program (F-SDBP).

Improved Awareness and Responsible Gadget Use

Participants expressed increased awareness of their gadget habits and demonstrated more responsible patterns of use. Many pupils described becoming more conscious of time spent on gadgets, reducing entertainment-based usage, and prioritizing academic tasks. Several responses indicated behavioral adjustments such as limiting gadget use before bedtime, avoiding use during meals, and choosing school-related activities over games.

“I now use my gadget mostly for schoolwork and not for games like before.” - Participant 4

“After the program, I try to stop using my phone when it is already late at night.” - Participant 9

“I became more aware that I was using my gadget too much, so now I check the time.” - Participant 15

These reflections suggest that the intervention enhanced pupils' behavioral awareness and promoted responsible gadget use, aligning with the quantitative findings that reflect increased awareness of gadget use behaviors.

Strengthened Self-Regulation and Time Management Skills

A dominant theme across responses was the development of self-control and time management. Pupils reported improved ability to stop using gadgets, when necessary, follow established rules, and choose alternative activities such as studying, playing outdoors, or spending time with family. Participants described becoming more disciplined and intentional in managing screen time.

“I can now control myself when I need to study. I finish my homework first before using my phone.” - Participant 2

“When my parents tell me to stop, I stop right away because I know it is important.” - Participant 35

“I try to balance my time between gadget use and my schoolwork.” - Participant 18

These narratives indicate growth in self-regulation skills, supporting the quantitative improvements observed in the self-regulation and awareness domain.

Increased Parental and Teacher Involvement in Monitoring Gadget Use

Participants also highlighted stronger guidance and support from parents and teachers after the implementation of the program. Pupils reported clearer rules at home, more frequent reminders, and increased monitoring of

online activities. In school, they noted reinforcement of gadget policies and encouragement to engage in non-digital activities.

“My parents now set a time limit for my phone use.” - Participant 57

“Our teacher reminds us not to use gadgets during class.” - Participant 13

“My parents check what I watch and talk to me about using gadgets properly.” - Participant 40

These responses reflect enhanced collaboration between home and school in managing gadget use, indicating that the intervention strengthened shared responsibility and accountability. The consistency between qualitative feedback and quantitative results suggests that coordinated parental and school involvement contributed meaningfully to improved digital balance among Grade 6 pupils.

DISCUSSION

This study aimed to evaluate the effectiveness of the Family–School Digital Balance Program (F-SDBP) in reducing excessive gadget use and strengthening self-regulation among Grade 6 pupils. However, the findings revealed that problematic gadget use behaviors increased after the intervention, indicating that the program did not immediately reduce excessive gadget use. While improvements were observed in self-regulation, awareness of balanced screen use, and compliance with home and school rules, the quantitative results for gadget use behavior suggest a different pattern. Perceived parental and teacher guidance was consistently high and further strengthened following the program. Qualitative reflections corroborated these patterns by highlighting increased time management, intentional gadget use, and stronger family–school collaboration.

The increase in gadget use behavior scores may reflect either a short-term increase in behavior or, more plausibly, a shift in pupils’ perception and reporting accuracy. As the intervention emphasized awareness and reflection, pupils may have become more conscious of their habits and more honest in identifying behaviors previously underestimated. This interpretation is supported by the observed improvements in self-regulation and awareness, as well as qualitative evidence indicating increased consciousness of time use and behavioral patterns. Such patterns are consistent with studies suggesting that awareness and self-regulation often precede observable behavioral change (Annesi & Post, 2026; Ludwig et al., 2020). Additionally, the relatively short duration of the intervention may have been insufficient to produce observable behavioral reduction, as behavioral change often follows increased awareness over time. These findings further indicate that problematic gadget use behaviors did not decrease during the intervention period.

The primary finding that coordinated parental and school involvement was associated with strengthened awareness, guidance, and self-regulatory capacities related to digital behavior can be interpreted through ecological systems theory and self-regulation frameworks, which posit that children’s behavior is shaped by consistent environmental structures across contexts. When expectations at home and school are aligned, pupils are more likely to internalize behavioral norms and develop autonomous regulation. Research suggests that structured parental mediation enhances children’s capacity to manage screen time and make adaptive digital choices (Flaibam Giovanelli et al., 2025). Similarly, school-based interventions that reinforce rule clarity and digital literacy have been shown to support executive functioning and self-regulatory development (Gunnars, 2024). The observed improvements likely emerged from the synergistic interaction between environmental scaffolding and pupils’ developing cognitive control mechanisms (Hsu & Jaeggi, 2014).

The present findings are consistent with evidence that multicomponent interventions integrating parental involvement and school policies are effective in strengthening self-regulation and awareness related to digital behavior, rather than producing immediate behavioral reduction (Yıldırım et al., 2025). Similar to (McArthur et al., 2022), daily screen use was found to be highly prevalent, reflecting global normalization of device engagement among late elementary learners. The strong role of parental rule-setting aligns with studies showing that consistent monitoring predicts healthier screen habits and reduced behavioral problems (Geurts et al., 2022). However, unlike meta-analytic evidence linking high screen exposure to significant internalizing and externalizing difficulties (Vasconcellos et al., 2025), this study observed mostly moderate baseline problematic

behaviors, suggesting early-stage rather than severe dependency. This divergence may reflect contextual protective factors such as structured school enforcement and proactive intervention before behavioral escalation. Additionally, while some studies emphasize parental digital literacy gaps (Shi, He, & Niu, 2024), participants in this study reported relatively strong parental engagement, indicating possible contextual variation in family support systems.

An important secondary finding was the particularly high compliance with school rules compared to certain aspects of home monitoring. This suggests that institutional norms and peer-mediated accountability may exert stronger immediate behavioral influence than household supervision alone. School environments often provide consistent cues, structured consequences, and collective reinforcement that facilitate habit formation and conformity to expectations (Phipps et al., 2024; Wang, 2025). Moreover, research indicates that adolescents respond positively to clearly articulated and consistently enforced school policies when perceived as fair and developmentally appropriate (Killen & Rutland, 2022). The slight variability in parental monitoring may reflect differences in household schedules or digital literacy levels, which have been shown to influence parental mediation practices (Adigwe, 2021).

The findings reinforce theoretical perspectives emphasizing the importance of multisystem alignment in fostering self-regulation and adaptive behavior among children. From an instructional standpoint, integrating structured digital balance modules and parent engagement activities within elementary curricula may strengthen pupils' capacity for responsible gadget use. The demonstrated benefits of coordinated rule-setting suggest that consistency between home and school contexts enhances behavioral internalization, although sustained intervention may be required to translate awareness into actual behavioral change. At the policy level, educational leaders may consider embedding digital wellness frameworks into school improvement plans while ensuring contextual adaptability. These implications underscore that preventive, low-cost, and collaborative approaches can meaningfully support sustainable digital balance in elementary education settings.

A notable strength of this study is its participatory action research design, which enabled iterative refinement of strategies within an authentic school context. The integration of quantitative and qualitative data strengthened interpretive depth and allowed triangulation of findings. The active involvement of parents and teachers enhanced ecological validity and practical relevance. However, the study was conducted in a single public elementary school, which limits the generalizability of results to other contexts. The use of purposive sampling may introduce selection bias, limiting the representativeness of the findings. The relatively short intervention period and reliance on self-reported measures may also affect the interpretation of behavioral change and long-term sustainability, particularly in relation to the absence of immediate behavioral reduction.

Future research may employ longitudinal designs to assess the durability of behavioral improvements beyond the immediate post-intervention period. Multi-site studies across diverse socioeconomic and cultural contexts could examine variability in parental mediation and school policy effectiveness. Incorporating objective digital tracking tools may complement self-reported data and strengthen measurement precision. Experimental or quasi-experimental designs with comparison groups could enhance causal inference regarding intervention impact. Additionally, theoretical extensions may explore the mediating role of executive functioning in linking environmental scaffolding to sustained digital self-regulation.

CONCLUSION

This study concludes that the Family–School Digital Balance Program (F-SDBP) was effective in strengthening pupils' self-regulation, awareness, and parental and school guidance, although it did not reduce problematic gadget use behaviors. The findings indicate that problematic gadget use behaviors did not decrease and instead showed higher post-test levels based on self-reported measures.

This suggests that the intervention may have heightened pupils' awareness and recognition of their gadget use habits rather than immediately changing behavior. While this outcome does not support the initial assumption of direct behavioral reduction, it highlights the importance of awareness and self-regulation as foundational steps toward long-term digital behavior change.

The results imply that sustained implementation, longer intervention duration, and continued reinforcement from both home and school are necessary to translate awareness into consistent behavioral improvement. Overall, the study underscores that collaborative, context-responsive interventions play a critical role in developing the competencies needed for responsible gadget use, even if behavioral changes emerge gradually over time.

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Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of this paper. The study was conducted independently, and all findings were reported objectively without influence from any funding body or external organization.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

Artificial intelligence (AI)-assisted technologies were used solely for language refinement, grammar checking, and structural editing during the preparation of this manuscript. The author critically reviewed, validated, and assumed full responsibility for the content, interpretation, and scholarly integrity of the study. No AI tool was used to generate research data, fabricate findings, manipulate statistical results, or replace academic judgment. All data collection, statistical analysis, and thematic interpretation were conducted by the researcher.

Author Contributions

Nurhanifa S. Abolais conceptualized and designed the study, supervised the implementation of the Family–School Digital Balance Program (F-SDBP), developed the research instruments, conducted data collection and data analysis, and drafted the manuscript. The author also reviewed and approved the final version of the manuscript.

Ethics Approval

This study was conducted in accordance with institutional ethical guidelines for educational research. Formal permission was obtained from the School Head of the participating public elementary school prior to data collection. Written informed consent was secured from parents or guardians, and assent was obtained from pupil participants. Confidentiality and anonymity were strictly maintained through coded identifiers, and participants were informed of their right to withdraw at any time without academic consequences. All collected data were used solely for research purposes.

Data Availability

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request. Data are not publicly available in order to protect pupil confidentiality and comply with institutional ethical standards.

REFERENCES

1. Adigwe, I. (2021). Identifying the Moderating and Mediating Variables in Parental Mediation Practices in Nigerian Families in the Digital Age. *Social Media + Society*, 7(3), 20563051211033817. <https://doi.org/10.1177/20563051211033817>
2. Almeida, L. P. d., & Peixoto, M. C. (2025). Efeitos Do Uso Excessivo De Tecnologias No Desenvolvimento Cognitivo E Comportamental De Crianças. *Revista ft*, 29(145), 54-55. <https://doi.org/10.69849/revistaft/ar10202504300954>
3. Annesi, J. J., & Post, P. G. (2026). Directionality of Self-Regulation and Self-Efficacy Within a Treatment Targeting Cardiovascular Exercise and Emotional Eating in Women: Interpretation and Application of Behavioral Theory. *Scandinavian Journal of Psychology*, 67(2), 643-653. <https://doi.org/https://doi.org/10.1111/sjop.70057>
4. Burhan, N., Lukman, Wahyu, S., Nofri, A., Muhammad Daffa, I., & Triono. (2024). The Role Of Parents And Families In Children's Education In The Digital Era. *Linguanusa : Social Humanities, Education and Linguistic*, 2(1), 9-22. <https://doi.org/10.63605/ln.v2i1.35>
5. Cosso, J., von Suchodoletz, A., & Yoshikawa, H. (2022). Effects of parental involvement programs on young children's academic and social-emotional outcomes: A meta-analysis. *Journal of family psychology : JFP : journal of the Division of Family Psychology of the American Psychological Association*.
6. Eirich, R., McArthur, B. A., Anhorn, C., McGuinness, C., Christakis, D. A., & Madigan, S. (2022). Association of Screen Time With Internalizing and Externalizing Behavior Problems in Children 12 Years or Younger: A Systematic Review and Meta-analysis. *JAMA Psychiatry*, 79(5), 393-405. <https://doi.org/10.1001/jamapsychiatry.2022.0155>
7. Flaibam Giovanelli, J., Soares da Silva, L., Abadio de Oliveira, W., Scatena, A., Ferreira Semolini, F., & Monezi Andrade, A. L. (2025). Parental mediation in the use of screens by children and adolescents: a systematic literature review. *Ciencias Psicológicas*.
8. Geurts, S. M., Koning, I. M., Vossen, H. G. M., & van den Eijnden, R. (2022). Rules, role models or overall climate at home? Relative associations of different family aspects with adolescents' problematic social media use. *Comprehensive psychiatry*, 116, 152318.
9. Gonzalez-DeHass, A. R. (2016). Preparing 21st Century Learners: Parent Involvement Strategies for Encouraging Students' Self-Regulated Learning. *Childhood Education*, 92(6), 427 - 436. <https://doi.org/10.1080/00094056.2016.1251791>
10. Gunnars, F. (2024). A systematic review of special educational interventions for student attention: Executive function and digital technology in primary school. *Journal of Special Education Technology*, 39(2), 264-276.
11. Hautakangas, M., Kumpulainen, K., & Uusitalo, L. (2022). Children developing self-regulation skills in a Kids' Skills intervention programme in Finnish Early Childhood Education and Care. *Early Child Development and Care*, 192(10), 1626-1642. <https://doi.org/10.1080/03004430.2021.1918125>
12. Hidayat, M. L., & Listiawati, V. (2018). The Urgency of Parents Digital Literacy to Prevent Their Children from Harmful Effects of Smart-Mobile Devices. *International Conference on Child-Friendly Education*,
13. Hsu, N. S., & Jaeggi, S. M. (2014). The emergence of cognitive control abilities in childhood. *Current topics in behavioral neurosciences*, 16, 149-166.
14. Killen, M., & Rutland, A. (2022). Promoting Fair and Just School Environments: Developing Inclusive Youth. *Policy Insights Behav Brain Sci*, 9(1), 81-89. <https://doi.org/10.1177/23727322211073795>
15. Ludwig, V. U., Brown, K. W., & Brewer, J. A. (2020). Self-Regulation Without Force: Can Awareness Leverage Reward to Drive Behavior Change? *Perspectives on Psychological Science*, 15(6), 1382-1399. <https://doi.org/10.1177/1745691620931460>
16. Madigan, S., Racine, N., & Tough, S. (2020). Prevalence of Preschoolers Meeting vs Exceeding Screen Time Guidelines. *JAMA Pediatrics*, 174(1), 93-95. <https://doi.org/10.1001/jamapediatrics.2019.4495>
17. Mansor, E., Ahmad, N., Raj, D., Mohd Zulkefli, N. A., & Mohd Shariff, Z. (2021). Predictors of Parental Barriers to Reduce Excessive Child Screen Time Among Parents of Under-Five Children in Selangor, Malaysia: Cross-sectional Study. *Journal of Medical Internet Research*, 23(4), e25219. <https://doi.org/10.2196/25219>

18. McArthur, B. A., Volkova, V., Tomopoulos, S., & Madigan, S. (2022). Global Prevalence of Meeting Screen Time Guidelines Among Children 5 Years and Younger: A Systematic Review and Meta-analysis. *JAMA Pediatr*, 176(4), 373-383. <https://doi.org/10.1001/jamapediatrics.2021.6386>
19. Musa, S. M., Purnamasari, J., Lestari, M., & Hikmah, H. (2025). Long-Term Effects Of Gadget Use On Children's Health. *Oshada*, 2(1), 166-177. <https://doi.org/10.62872/xph8ec58>
20. Nagata, J. M., Ganson, K. T., Iyer, P., Chu, J., Baker, F. C., Pettee Gabriel, K., Garber, A. K., Murray, S. B., & Bibbins-Domingo, K. (2022). Sociodemographic Correlates of Contemporary Screen Time Use among 9- and 10-Year-Old Children. *The Journal of Pediatrics*, 240, 213-220.e212. <https://doi.org/10.1016/j.jpeds.2021.08.077>
21. Novianti, R., Hukmi, H., & Maria, I. (2019). The Role of Parents in Assisting the Use of Gadget in Alpha Generation. *SS9 & 3rd URICES, 2019*, Pekanbaru, Indonesia,
22. Vasconcellos, R., Sanders, T., Lonsdale, C., Parker, P., Conigrave, J. H., Tang, S., del Pozo Cruz, B., Biddle, S. J. H., Taylor, R., Innes-Hughes, C., Salmela-Aro, K., Vasconcellos, D., Wilhite, K. L., Tremaine, E., Booker, B., & Noetel, M. (2025). Electronic screen use and children's socioemotional problems: A systematic review and meta-analysis of longitudinal studies. *Psychological bulletin*, 151 5, 513-543.
23. Yıldırım, Y., Demirel, S. C., & Avcioglu, B. (2025). Shaping children's digital futures: The role of parenting strategies in regulating children's technology use. *Acta psychologica*, 258, 105265.
24. Žmavc, M., Horvat, J., Židan, M., & Selak, Š. (2025). The effectiveness of school-based interventions to reduce problematic digital technology use and screen time: A systematic review and meta-analysis. *Journal of Behavioral Addictions*, 14(2), 571-589. <https://doi.org/10.1556/2006.2025.00043>