

Shaping Digital Habits and Developmental Skills: The Role of Parent-Teacher Collaboration in Enhancing Early Childhood Education

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Abstract

This study examined the role of parent-teacher collaboration in shaping digital habits and enhancing developmental skills among early childhood learners in a technology-driven environment. Anchored on Bronfenbrenner's Ecological Theory (Bioecological Theory), Vygotsky's Theory of Social Constructivism with its scaffolding concept, and Parental Mediation Theory, the research investigated how home-school partnerships influence children's responsible technology use and holistic growth. Specifically, it determined the demographic profiles of participants, the quality of parent-teacher collaboration in terms of communication frequency and consistency of home-school digital rules, the prevailing parental mediation styles (active, restrictive, and co-viewing), the status of children's cognitive, social-emotional, and fine motor skills, and the predictive relationship among these variables. A descriptive-correlational research design was employed. Data were gathered from 50 parents and 2 ECD teachers of 50 children aged 4–6 years enrolled at Noel Academy Christian of Sariaya, Philippines Incorporated, and Pillars of Faith Christian Academy. Each of the 50 children was rated by both the parent and the class teacher using the same validated researcher-made 40-item four-point Likert-scale questionnaire, yielding 100 completed responses for analysis, supplemented by official Philippine ECCD Checklist scores for the Cognitive, Social-Emotional, and Fine Motor domains. Weighted means and standard deviations described levels of collaboration, digital habits, and developmental skills, while Multiple Linear Regression Analysis tested predictive relationships at the 0.05 significance level. Findings showed parent-teacher collaboration at a high to very high level (overall composite mean 3.19), with communication frequency rated very high (3.30) and consistency of home-school digital rules rated high (3.08). Restrictive mediation was the dominant digital habit (3.26, consistently practiced), followed by active mediation (3.13, frequently practiced) and co-viewing (2.50, rarely practiced). Children's developmental skills were well-developed to fully mastered overall (3.07), with fine motor skills highest (3.28), cognitive skills next (3.20), and social-emotional skills relatively lower yet still well-developed (2.73). Regression results confirmed a statistically significant model ($R = 0.609$, $R^2 = 0.371$, $F = 11.107$, $p = 0.001$), rejecting the null hypotheses and establishing that parent-teacher collaboration and digital parenting practices significantly predict developmental skills, with communication frequency as the strongest contributor. The study concludes that strengthened home-school partnerships and guided digital mediation positively influence early childhood developmental outcomes. It recommends institutionalizing the proposed ECD Digital Wellness Supplementary Material: A Parent-Teacher Intervention Guide to formalize consistent digital rules, approved educational apps, device-free practices, and monthly monitoring. The research aligns with Sustainable Development Goal 4 (Quality Education) by advancing inclusive, equitable early childhood learning through evidence-based family-school collaboration. Its sustainability

impact lies in strengthening institutional practices, social partnerships between homes and schools, and community capacity for balanced digital wellbeing, thereby supporting long-term developmental equity for young learners.

Keywords: Developmental Skills; Digital Habits; Digital Wellness; Early Childhood Development; Fine Motor Skills; Parent-Teacher Collaboration; Parental Mediation; Restrictive Mediation; Social-Emotional Skills

1. Introduction

Digital devices have caused substantial effects on the screen time of children. The rapid development and increasing use of digital technology have significantly influenced children's lives, particularly their education, communication, and socialization (Panjeti-Madan & Ranganathan, 2023). Life surrounded by digital media has become progressively popular, whether in rural or urban areas, if the internet is sustained. From an early age, most children use devices every day, spending considerable amounts of time watching TV and using their phones. If parents are too busy with their work, they often use touchscreen devices to keep children occupied. By the age of six, children's brains have undergone substantial development, making this an important period for growth. Children nowadays are actively into digital media because of the interactive features and images it offers, which are accessible using screen devices. These skills are not innate and need to be developed through meaningful and guided experiences, including the use of media, which can help build skills in self-regulation and other important developmental abilities (Bream, 2023). Children today have access to a variety of screen devices for their screen time, like laptops, game consoles, smartphones, and tablets, in addition to traditional home-based television (Byrne et al., 2021). Screens have the potential to enhance education and learning; however, excessive time spent in front of a screen and multitasking with other media has been associated with subpar academic performance and executive functioning. Cognitive development is significantly influenced by screen media, which can have both positive and negative effects. Parents may regulate their children's screen time by establishing boundaries, employing parental controls, and demonstrating appropriate screen behavior. Enhanced learning activities for children that encourage developmental growth and promote healthy wellbeing can be strategized to reduce the possible negative impacts of too much usage of screen time (Sudheer et al., 2023). Society is adapting to an online lifestyle faster than ever before. Children can be exposed to and use electronic devices as young as age two, and as screen time grows, concerns could occur (Qi et al., 2023). The digitalization of children's lives has significantly expedited as they have begun to become "digital natives" since the turn of the millennium. This transformation has significantly increased their use of digital technology and screen time globally (Rashid et al., 2020, cited by Nihan et al., 2021). The digital wellbeing of children can be compromised because they are vulnerable and sensitive to digital devices when their screen time is increasing (Cao & Li, 2023). Parents are key in enhancing their children's digital wellbeing by becoming examples of appropriate digital behavior and having open conversations about the pros and cons of the Internet. A parent's role also involves important responsibilities such as teaching children to gain basic skills, preparing them for the outside world, and encouraging the positive social and psychological development of their children. Parents are also accountable for guiding children and instilling in them the behaviors and attitudes that can safeguard them from peril, while simultaneously promoting practices that are advantageous to children. In this statement, it seems that parents and guardians are the primary individuals responsible for protecting their children from possible risks associated with digital devices and technologies (Hark, 2023). To cultivate individuals who are socially, emotionally, and psychologically healthy, it is imperative that parents are cognizant of the potential hazards that their children may encounter online. There are important responsibilities for parents when introducing digital technology to their child. Parents need to have the necessary competencies to protect their children from possible online risks and make sure that children can benefit from the learning experiences and other educational opportunities offered by different digital platforms in a digital environment (Hark, 2023). Moreover, instructors also have a significant part to play in improving early childhood education by influencing the digital habits and developmental skills of children. It is vital for teachers to use technology in the classroom to make the activities more interesting and to engage the learners. It contributes to the holistic development of children by fostering technological literacy, creativity, critical thinking, and skills for lifelong learning, as well as balanced technology use and safe and responsible behavior online. Hence, teamwork between the teacher and parents is vital in early childhood education since it establishes a collective support structure that enhances developmental achievements. To improve cognitive skills, social-emotional, and fine motor skills in the context of digital habits, strong collaboration is paramount, leading to higher achievement and enhancing these developmental skills. It fosters healthy digital habits in early childhood because it creates an interactive environment where shared understanding and consistent guidance shape children's technology use. With shared goals, support, and consistent, strong communication, parents and teachers can be confident that children can become responsible in using digital tools and are actively involved in school programs and activities. A study on the inclusive practices of classroom teachers revealed that the majority of teachers considered collaboration a crucial component of educational practice; however, strategies for engagement varied considerably in terms of method and frequency (Boonk et al., 2018), cited by Samantha Frye (2022). Earlier studies have emphasized the significance of teamwork within the digital education domain. For instance, Yu (2022) stressed

the importance of technological literacy in enhancing the effectiveness of online learning, and Burhan Nudin et al. (2024) suggested that collaboration between parents and teachers can support the development of children's character in the current age. However, most of the earlier studies focused on the duties of parents and teachers separately without paying attention to the cooperative dynamics between them in developing an integrated learning ecosystem (Khair, 2025). There are several studies that establish that the cooperation between parents and teachers enhances the achievement of children, which is an important part of preschool education (Ashfaq, O. et al., 2024). Active parental involvement in preschool education leads to better cognitive and socioemotional development and hence better academic performance (Ashfaq, O. et al., 2024), as demonstrated by Epstein and Sanders (2006), Pomerantz and others (2007), and Fan and Chen (2001). In order to enhance academic performance, positive behavior, and overall wellbeing of children during their early school years, it is crucial to foster collaboration between parents and teachers and utilize technology. Some think that technology benefits children's overall development, while others worry about the potential harm that technology could do to children (Velasco, M. et al., 2024). This is a significant challenge that numerous schools encounter, as instructors neglect to involve parents, and parents neglect to supervise their children's academic development. Parent-teacher collaboration is advantageous to the academic, emotional, and social growth of a child. Together, teachers and parents can foster an atmosphere that nurtures a child's potential and inspires a lifelong love of learning (Velasco, M. et al., 2024). Communication among school leaders, teachers, parents, and children is significant in establishing an effective educational environment within educational institutions. In particular, the communication between instructors and parents is a critical factor that influences the learning outcomes of early childhood education. Modes, content, barriers, responsiveness, and frequency were the defining characteristics of communication between parents and teachers. The pace, cost, quality, and accessibility of communication have been influenced by technology, as evidenced by the wide range of communication methods, such as emails, phone calls, text messages, parent-teacher meetings, and access to online portals. The emergence of new mobile technology is significantly transforming the ways in which schools and teachers communicate with their parent community (Kraft & Bolves, 2022). Effective communication is one of the six strategies for adult involvement that Epstein's framework has identified. In fact, teacher communication skills have been described as the most influential predictor of parent involvement (Gisewhite et al., 2021). Epstein and her associates described the communication function as the need to establish effective forms of school-to-home and home-to-school communication concerning school programs and children's progress (Epstein et al., 2019), cited by Graham-Clay (2024). It was underscored that the school should be viewed as a representation of an inclusive approach that includes ongoing communication, shared leadership, and mutual respect. An effective communication strategy is anticipated to yield advantages for children, parents, and educators. Epstein et al. (2019), cited by Graham-Clay (2024), suggested that effective communication can strengthen interactions between teachers and parents, promote greater Awareness and monitoring of children's progress and behavior, foster a better understanding of school policies and programs, and enable teachers to obtain and better understand parental views regarding their child's learning progress. Parents' expectations regarding their children's education are encompassed by parental involvement. Nine distinct definitions of parent engagement were identified in a study on parent engagement in early childhood. The definition that received the greatest consensus described parent engagement as parents' active involvement in their child's education. Parental engagement has historically been defined in a wide range of ways, from direct academic help to more indirect types of support, such as emotional support and involvement in school governance (Piskorz-Ryń & Chikwe, 2024). Parents are very important in guiding and supporting the total development of their children. Their tasks cover all aspects of development, including physical, intellectual, artistic, spiritual, and moral development, as well as helping children achieve their learning objectives at school (Susilo, 2020, as referenced by Syuraini et al., 2022). An educational institution's excellence is significantly evaluated by the extent to which parents are involved in their children's education. As parents' expectations are increasing, more emphasis is also paid to providing children with a learning environment that is safe, healthy, and supportive of their educational needs (Syuraini et al., 2022). Parents' involvement in their children's education has been related to better learning practices and higher academic performance. This involvement is most effective when parents, teachers, and school administration collaborate. This kind of collaboration is one of the six primary elements of parental participation, which also comprises decision-making, parenting, volunteering, communication, and learning activities at home. These areas collectively can have a favorable influence on children's academic performance, especially in the early years of education. According to Velasco, M. et al. (2024), parents must understand their role in their children's education and be actively involved in the learning process. Similarly, Kantova, K. (2024) argued that the time parents spend with their children might be a good investment toward the development of their knowledge, talents, and general human capital. While effective, Parental Mediation Theory is not without its drawbacks. First, it is grounded mostly in traditional media-effects research, which has focused primarily on the negative impacts of media exposure on children's information processing and cognitive development. Secondly, the idea gives a lot of importance to the cognitive growth and the susceptibility of youngsters to the media's impact. Third, much of the available research has focused on television consumption and possible links to cognitive deficiencies. Consequently, there is relatively little knowledge of how the theory might be fruitfully applied to children's experiences with emerging kinds of digital and mobile media (Clark, L. S., 2021). Parental mediation has broadened to encompass the importance of interpersonal contact between parents and children in coping with the possible negative effects of exposure to

digital media. The article also notes that, in addition to active mediation, restrictive mediation, and co-viewing, participatory learning could be considered as a new strategy in future studies. This method motivates parents and children to work jointly with each other via digital media (Clark, L. S., 2021). Drawing on the bioecological framework, the home and early childhood education (ECE) program can be viewed as two significant microsystems that shape children's development and learning. Within the ECE environment, children interact with materials, symbols, adults other than their parents, and peers, all of which can contribute to their development of school-readiness skills. The relationship between the home and ECE settings forms part of the mesosystem, where interactions between these two environments influence children's experiences. In particular, the quality of family-teacher relationships may have implications for children's developmental outcomes, including their level of engagement in ECE settings (Lewis et al., 2023). Existing research examining children's learning outcomes in relation to family-teacher relationships has predominantly been conducted in K–12 educational settings, with considerable attention given to academic achievement. In contrast, fewer studies have explored the early childhood years, despite evidence indicating that family-teacher collaboration and communication are associated with children's school readiness, developmental abilities, academic performance, social-emotional growth, and behavior in preschool environments (Lewis et al., 2023). Digital parenting is the process by which parents supervise and regulate their children's interaction with digital media to promote its advantages while mitigating its potential hazards. Digital parenting practices and their impact on children's digital behaviors and development were the subject of a scoping review, which identified several key themes. First, parents hold differing views about children's early exposure to digital media, viewing it either as a useful educational resource, a source of distraction, or an issue shaped by cultural differences. Secondly, parental actions such as parental modeling, parenting approaches, and mediation affect children's digital behavior. Third, disparities in how parents engage in digital parenting have been linked to variances in children's digital habits, which may be related to their technological literacy level, parent-child relationships, social-emotional development, and behavioral outcomes. The study suggests that future research could evaluate programs that enhance parents' knowledge of the internet and review monitoring techniques that can better comprehend children's use of digital media (Choy et al., 2024). These Early Childhood Care and Development (ECCD) tools are a collection of instruments that assist educators, caregivers, and parents in fostering the comprehensive development of children. The parents who use these tools are taking an active role in leveraging the resources at hand to foster their children's growth holistically. The study results underline the need for parents to be actively involved and provide continuous attention since children need the right guidance and support to develop basic skills and progressively learn more sophisticated talents. Children need sufficient help and focus to gain the abilities essential to graduate to more advanced stages of education. So, parents have a critical role to cooperate closely with teachers in the implementation of ECCD tools as part of the kindergarten curriculum. Such teamwork can assist in ensuring that children get consistent direction both at home and in school (Ladrino & Daulong, 2024). The study additionally underlines the necessity for an intervention program that caters to the needs of the kindergarten parents on how to properly use the ECCD tools, with the internal and external stakeholders of the school contributing to the development of the children from the early stages (Ladrino & Daulong, 2024). Early Childhood Care and Development (ECCD) programs are crucial in laying the framework for children's future academic achievement, social skills, and mental health. The study investigated the effectiveness of ECCD programs in supporting the development of children and where improvements are still needed. Based on the ratings given by the parents and teachers, the ECCD service delivery at the daycare facility was typically performed well. Domains 7, 6, 3, and 1 had the highest mean scores across the different domains, suggesting that the associated activities were implemented at a strong level. The results indicate that the ECCD program generally carries out activities and interventions across the indicated domains in a consistent and successful fashion. Nevertheless, there are several domains that demand more attention, in particular Domains 5, 2, and 4, which were evaluated relatively lower by both groups of respondents (Madeja, M. et al., 2025). These findings may be suggestive of program implementation issues, resource availability, or lack of integration of activities related to these categories. However, the ECCD program does offer some important strengths in promoting children's development despite these problems. However, tailored interventions and better resource allocation in the indicated areas may help foster a more holistic, balanced, and developmentally appropriate response to children's needs (Madeja, M. et al., 2025).

The study focuses on private schools in the Schools Division of Quezon, specifically Noel Academy Christian of Sariaya, Philippines Incorporated, and Pillars of Faith Christian Academy, involving parents and lead teachers of children aged 4 to 6 years enrolled in Early Childhood Development programs. Globally, the rapid digitalization has increased children's screen time and raised concerns about digital wellbeing (Rashid et al., 2020, cited by Nihan et al., 2021; Cao & Li, 2023; Qi et al., 2023). Nationally and locally, parent-teacher collaboration remains essential for consistent guidance on digital habits and developmental milestones measured through tools such as the Philippine ECCD Checklist, yet quantitative evidence linking collaboration, mediation styles, and specific developmental domains remains limited in early childhood settings within the Philippine context.

This study uses three key frameworks to make sense of the role of parent-teacher collaboration in shaping digital habits and developmental skills in enhancing early childhood education. The first is Bronfenbrenner's Ecological Theory (Bioecological Theory), the second is Vygotsky's Theory of Social Constructivism, particularly the concept of "scaffolding," and the third is Parental Mediation Theory. These theories suggest that parent-teacher collaboration provides the structural support required to enhance a child's developmental skills in a digitally fast-

changing environment. Bronfenbrenner's Ecological Theory views the child as being at the center of several nested environments. It provides a comprehensive view of how the dynamic relationship between parents and teachers (a mesosystem connection) can influence a child's digital habits and development within different contexts. Vygotsky emphasized that children develop knowledge and skills through interaction and guidance from more knowledgeable individuals, referred to as "More Knowledgeable Others" (MKOs). In the digital age, parents and teachers act as MKOs who provide temporary support to assist the child in navigating technology, ensuring the child develops the self-regulation needed to move from dependent screen use to independent and healthy digital habits. This study also used Parental Mediation Theory, which posits that "Active Mediation" (interaction and discussion) is more helpful for developmental progress than "Restrictive Mediation" (rules alone). In the present study, parent-teacher collaboration will be tested as a catalyst that encourages parents to use these 'Active' mediation tactics. Ultimately, the strongest theoretical foundation would be a combination of these frameworks. It allows the researcher to gain a detailed insight into the wider framework of influences, how the home and school environments interact, and to focus on the specific behaviors and partnership activities engaged in teacher-parent collaboration. The research paradigm is based on the Input-Process-Output (IPO) model. The input includes the demographic profile of parents (educational attainment), instructors (years of experience), and children (age). It also includes quality of parent-teacher collaboration (communication and consistency), children's digital habits (parental mediation styles: active, restrictive, and co-viewing), and developmental skills (cognitive, social-emotional, and fine motor). The process involves the dissemination of validated questionnaires and assessment of developmental checklists utilizing the Philippine ECCD Checklist for data collection. Frequency and percentage distributions, weighted mean, and standard deviation will be used as well for the statistical analysis. Then we will do an inferential test with Multiple Linear Regression Analysis. Finally, interpretation involves comparing the findings to the existing literature. The final part is the recommended relevant output, the ECD Digital Wellness Supplementary Material: A Parent-Teacher Intervention Guide. The outcome will benefit not just teachers and parents, but also school administrators and education policymakers such as the Department of Education (DepEd). In the examined literature, there is a scarcity of quantitative evidence that links these three specific themes: (1) the level of collaboration, (2) the nature of digital habits, and (3) the specific enhancement of developmental milestones. Research on the role of parent-teacher collaboration in shaping digital habits and developmental skills in early childhood education is an important area of study, with a significant gap in understanding how digital habits and developmental skills can be effectively facilitated through effective collaboration. On the first theme, collaboration on the views of educators is essential when it comes to the education and learning of children, but is sometimes overlooked when this collaboration is in the context of digital technology. There is a lack of quantitative scales that measure two or more individuals working together within a virtual interface to achieve a shared developmental goal. Numerical measurement cannot conclude if digital collaboration generates the same results as social and physical collaboration without key performance indicators. On the second theme, the nature of digital habits without active engagement in proactive digital technology usage is often viewed as having no clear or guiding purpose. Quantitative data rarely differentiates between a child who spends two hours alone on a digital device versus a child who spends two hours using the same gadget to coordinate a group project or take-home assignment. The literature lacks measurable assessments of individuals' online time consumption and routine actions to correlate with the progression of children over time. On the last theme, in this generation of children, we can observe them as very knowledgeable in terms of using gadgets. They are so familiar with applications more than some adults can do, and even 2-to 4-year-olds can navigate different digital platforms very well. This is where the complete lack lies between the basic skills, like social interaction, and modern skills, like critical thinking. While we measure fine motor skills, there is little quantitative data on how digital navigation serves as a modern developmental milestone. The study has no numerical data yet to measure or to have a standard in viewing enhanced developmental skills in a technology-rich environment, where parent-teacher partnership in shaping digital habits is the key factor. This study fills that gap by providing a predictive model of how the partnership between home and school can effectively modify the interaction in technology among learners, looking forward to positive digital habits and enhanced developmental milestones. The reviewed literature establishes a clear understanding that the early childhood period is a critical stage for digital habits and developmental milestones. Moreover, parent-teacher collaboration is paramount in all aspects of learning among early childhood by creating a consistent and supportive digital-rich environment. Partnership among parents and teachers can develop a consistent and effective strategy to promote healthy digital habits that enhance social-emotional skills, academic performance, and overall development, ensuring a cohesive learning experience for the child. Existing studies highlight that when parents and teachers communicate frequently, there is consistency in rule and discipline Management. However, a quantitative gap remains if this consistency between parents and teachers can really improve self-regulation in children. Furthermore, there is a need to examine how specific demographic profiles (parental educational attainment or teacher years of experience) influence the overall quality and frequency of these collaborative partnerships. Effective digital habits and enhanced strategies in the home-school setting can be achieved by creating a digital strategy with clear outcomes, selecting appropriate platforms, and using digital tools to enhance communication and strategic collaboration. Crucially, these collaborative strategies must be assured by the evaluation of specific parental mediation styles (active, restrictive, or co-viewing) to determine which combination most effectively bridges the gap between home-school digital habits. In this study, the ECCD Checklist was used to satisfy the need for a standardized assessment and to measure

specific developmental outcomes with the goal of moving toward a holistic assessment of child growth. The suggested intervention scheme in forming digital habits and developmental skills for the enhancement of early childhood education is based on the combination of collaboration strategy and mediation quality. In the current digital age, digital technology may provide tools and platforms with multiple cooperation models; there is a gap in determining which model can best employ not just with a conventional focus but also more on modern cognitive demand. The study aims to shift from broad collaboration models toward data-driven approaches to understand how to facilitate collaboration across different educational groupings. Therefore, this study has used the ECCD Checklist to inform the study of numerical developmental scores as a standard assessment, along with considering the analysis of demographic influences to determine the effective collaboration model, which will encourage children to engage actively and achieve holistic development. Further research is needed to create solutions to close these gaps and ensure that all families feel connected to and participate in their child's education. This includes investigating culturally sensitive ways, using readily available digital resources, and building flexible communication routes. By determining numerical values on the relationship between the effects of interaction and children's developmental status, this study aims to provide an effective collaborative model even in resource-limited early childhood settings. Further research should also investigate the interaction between home-school digital strategies and overcoming communication barriers. Having knowledge of the interplay is crucial in shaping digital habits and developmental skills to prioritize growth and overall development of children in a learning ecosystem. To move toward this holistic understanding, the present study statistically analyzes the interplay between demographic profiles, mediation quality, and collaboration frequency. The research provides direct measurement to bridge the gap between variables (collaboration quality, digital habits, and developmental skills) and the children's scores on the ECCD Checklist and to understand their significant relationships. Parent-teacher strength in collaboration and effective partnership can make a big difference in the digital habits of children, since today's children are very much into technology. This study seeks to quantify this relationship, moving beyond theory to provide empirical evidence of how collaboration enhances child outcomes. Specifically, the research employs a predictive model to determine if the interaction between parental mediation styles and home-school rule consistency can significantly enhance developmental domains as measured by the Phils. ECCD Checklist. A predictive model, according to parent-teacher shared goals, is based on children's developmental needs and is the quantitative basis for proposing an intervention scheme that will bridge the gap between collaboration models and data-driven pedagogy.

This research aligns primarily with SDG 4 (Quality Education) by examining how parent-teacher collaboration and guided digital habits support the holistic development of cognitive, social-emotional, and fine motor skills in early childhood learners, contributing to inclusive and equitable quality education and lifelong learning opportunities. It further supports SDG 3 (Good Health and wellbeing) through its focus on digital wellness, balanced screen time, and the mitigation of risks associated with excessive device use that can affect children's physical, cognitive, and socio-emotional health. SDG 17 (Partnerships for the Goals) is relevant because the study centers on strengthening home-school partnerships as a mechanism for shared responsibility in shaping children's digital behaviors and developmental outcomes. Elements of SDG 9 (Industry, Innovation and Infrastructure) apply in the context of leveraging digital platforms and technology for communication and educational engagement while promoting responsible and developmentally appropriate use.

The study contributes to educational sustainability by generating evidence-based strategies that strengthen consistent home-school guidance, thereby supporting the long-term development of foundational skills essential for lifelong learning. It advances public health and digital sustainability by promoting balanced technology use and active parental mediation that protects young children's wellbeing in an increasingly digital environment. Through its emphasis on collaborative practices and a proposed intervention guide, the research supports institutional and community sustainability by offering practical tools that schools, parents, and administrators can institutionalize to foster equitable, developmentally appropriate digital experiences. In the Socioeconomic domain, improved early developmental outcomes linked to effective collaboration may enhance school readiness and reduce later educational disparities. Overall, the work integrates educational, health, technological, and partnership dimensions to promote sustainable early childhood development in technology-rich settings.

2. Materials and methods

2.1 Research Design

This study utilized a quantitative descriptive-correlational research design to describe respondent characteristics and measure predictive relationships without manipulating variables (Creswell & Guetterman, 2021). The theoretical framework integrated Vygotsky's Theory of Social Constructivism, framing collaboration as a scaffolding mechanism where a More Knowledgeable Other provides structured guidance, Bronfenbrenner's Bioecological Theory regarding dynamic interactions across environmental microsystems and mesosystems (Tong, P., & An; I. S., 2024), and Parental Mediation Theory to evaluate parental strategies in guiding digital media use.

2.2 Locale of the Study

The investigation was conducted across two private educational institutions located within the Schools Division of Quezon, specifically Pillars of Faith Christian Academy and Noel Academy Christian of Sariaya, Philippines Incorporated.

2.3 Respondents of the Study

The respondents comprised two early childhood development lead teachers and fifty parents or guardians of enrolled children aged four to six years. To capture dual perspectives, each teacher evaluated all learners in their respective classrooms, yielding 24 responses from the first teacher and 26 from the second teacher, while each parent evaluated their own child, resulting in 100 completed questionnaire responses across the 50 participating children.

2.4 Sample and Sampling Procedure

A non-probability purposive sampling technique was used to select respondents with direct and relevant experience aligned with the research objectives. The inclusion criteria required teachers to serve as lead or advisory educators in early childhood classrooms, and parents to have children aged four to six years currently enrolled in the selected schools.

2.5 Research Instrument

Data were gathered using a researcher-developed 40-item, 4-point Likert-scale questionnaire alongside the standardized Philippine Early Childhood Care and Development Checklist. The Likert-scale questionnaire was validated by a panel of experts in early childhood education and quantitative research to establish content validity, item clarity, and alignment with research objectives.

2.6 Validation of the Research Instrument

The researcher-developed 40-item, 4-point Likert scale underwent expert validation to establish content validity and ensure the clarity, relevance, appropriateness, and alignment of its items with the study objectives. Experts in Early Childhood Development and Quantitative Research reviewed the instrument, and their recommendations were incorporated to refine the items and ensure alignment with the study variables.

2.7 Data Gathering Procedure

Formal written permission was secured from school administrators prior to data collection, followed by obtaining informed consent from participating parents and teachers. The survey questionnaire was administered during faculty meetings, Parent-Teacher Association assemblies, and through a secure Google Forms digital platform. Official developmental milestone scores were extracted directly from the children's Early Childhood Care and Development Child's Record 2 summary reports, and all collected data were coded to maintain respondent confidentiality.

2.8 Statistical Treatment of Data

Descriptive statistics, including frequency distributions, percentages, weighted means, and standard deviations, were computed to summarize demographic profiles, collaboration quality, digital habits, and developmental skill levels. Multiple Linear Regression Analysis was applied to examine the direction, strength, and predictive significance of the independent variables on child developmental outcomes, using the coefficient of determination and standardized beta coefficients to evaluate effect sizes. Hypothesis testing was conducted using F-tests and t-tests at a 0.05 level of significance, with data processed via Microsoft Excel and SPSS and verified by a statistician.

2.9 Ethical Considerations

The study adhered to ethical principles for research involving human participants. Formal approval was obtained from the participating schools, and informed consent was secured from respondents after explaining the study's purpose, procedures, voluntary participation, and right to withdraw without penalty. Confidentiality and privacy were maintained, with data used solely for academic and research purposes. The researcher also ensured that participation involved no harm, discomfort, or undue pressure and upheld respect, fairness, and research integrity.

3. Results and Discussion

3.1 Demographic Profile of Respondents

3.1.1 Educational Attainment of Parents

The distribution of parent-participants according to their highest level of education revealed that graduates of a bachelor's degree formed the largest proportion, representing 48% (24 respondents) of the sample. High school graduates comprised 26% (13 respondents), followed by individuals with vocational training at 18% (9 respondents), while 8% (4 respondents) completed graduate studies. These findings indicate that over half of the

parent population possesses higher education credentials. This foundational level of educational attainment suggests that parents possess sufficient literacy and baseline knowledge to engage in structured parent-teacher collaboration and maintain an informed perspective regarding their children's digital habits and developmental milestones.

3.1.2 Teaching Experience of Teachers

The teacher-participant sample consisted of lead educators supervising the target early childhood learners. Assessment of their professional background revealed that 100% of the teacher-participants possessed between 6 and 10 years of teaching experience. Neither novice teachers with 0 to 5 years of experience nor veteran educators with 11 or more years were represented in the sample. The results reflect an educator group situated at a mid-career stage of professional practice. Having accumulated 6 to 10 years of instructional experience, these teachers possess the practical expertise required to evaluate early childhood developmental trajectories, handle digital behaviors, and maintain consistent communication channels with parents.

3.1.3 Age Distribution of Children

The learner group comprised 50 preschool children aged 4 to 6 years old. Within this group, 5-year-old children constituted the largest segment at 42% (21 learners), followed by 6-year-old children at 32% (16 learners), and 4-year-old children at 26% (13 learners). The demographic baseline establishes that most of the learners are at the senior kindergarten or preparatory level. This developmental stage serves as a critical period for measuring how home-school collaboration and digital habits influence emerging cognitive, social-emotional, and fine-motor competencies.

3.2 Quality of Parent-Teacher Collaboration

3.2.1 Communication Frequency

The quality of parent-teacher collaboration in terms of communication frequency earned an overall composite weighted mean of 3.30, corresponding to a very high level of quality, with a standard deviation of 0.05 indicating strong respondent consensus. The use of digital platforms, such as mobile applications and email, attained the highest mean score of 3.63, followed by the regularity of communication regarding learning progress at 3.46, consistency of communication throughout the school year at 3.30, and parental initiative in communicating concerns at 3.10. The lowest-ranked indicator was the provision of frequent updates on classroom activities and performance, which nevertheless maintained a high-quality rating at 3.02. The high communication frequency demonstrates a strong reliance on digital tools and mobile applications as primary channels for home-school communication. Although learning progress is regularly communicated, the provision of continuous, realtime updates on daily classroom activities remains somewhat limited by instructional time constraints. Overall, the findings indicate that digital communication has been effectively integrated into parent-teacher interactions, supporting consistent communication and strengthening the connection between the home and school environments.

3.2.2 Consistency of Home-School Digital Rules

Evaluation of rule consistency across home and school environments produced an overall composite weighted mean of 3.08, denoting a high-quality level of collaboration, with a standard deviation of 0.14 confirming minimal response variance. The clarity of school policies communicated by teachers recorded the highest weighted mean of 3.34, followed by adherence to school-provided device guidelines at 3.20, reinforcement of responsible behavior rules at 3.04, and alignment of screen time expectations at 2.94. The lowest weighted mean was recorded for shared understanding of behavioral signals for device cessation at 2.89, which still represented a high-quality level. The findings demonstrate strong alignment regarding teacher-led policy dissemination and general guideline Awareness across both settings. However, the lower score for managing device cessation signals highlights an operational implementation gap during screen time transitions. While parents understand the established digital guidelines, managing child compliance during device removal presents a recurring challenge, reflecting a common power struggle in digital parenting where rule comprehension does not automatically resolve emotional friction during screen cessation.

3.3 Prevailing Digital Habits of Children

3.3.1 Active Mediation

The practice of active parental mediation recorded an overall composite weighted mean of 3.13, indicating that communicative guidance is frequently practiced, supported by a standard deviation of 0.08. Providing explanations regarding appropriate and inappropriate digital media usage attained the highest weighted mean of 3.40, followed by delivering guidance on digital risks and benefits at 3.30, engaging in dialogue about accessed content at 3.11, and reinforcing ethical online behavior at 2.96. The lowest weighted mean occurred in encouraging critical reflection on lessons learned from media at 2.87. Parents prioritize verbal instruction centered on safety boundaries, explicitly defining acceptable screen behaviors and warning children against prospective online risks. Nonetheless, engaging young children in deeper critical reflection remains less frequent, illustrating

that while foundational dialogic mediation is well-established, advancing toward higher-order critical evaluation requires structured guidance to foster long-term digital literacy.

3.3.2 Restrictive Mediation

Restrictive mediation emerged as the most dominant mediation style, earning an overall composite weighted mean of 3.26, which signifies consistent practice, with a standard deviation of 0.08. Limiting access to specific content types and applications received the highest weighted mean at 3.41, followed by establishing clear screen time regulations at 3.32, restricting device use during study periods at 3.28, and monitoring rule compliance at 3.18. The lowest indicator involved enforcing strict adherence during active device usage, which recorded a weighted mean of 3.12. These data demonstrate that parents rely on boundary setting and content restrictions as primary strategies for managing early childhood screen exposure. Setting explicit limits on accessible platforms and overall screen duration serves as an accessible first line of defense, consistent with Rideout and Robb (2025), who observed that parents of young children predominantly utilize rule-based and technological restrictions to shield early learners from unsuitable digital exposure.

3.3.3 Co-Viewing Practices

Co-viewing practices recorded an overall composite weighted mean of 2.50, indicating that joint media engagement is rarely practiced, with a standard deviation of 0.11. Maintaining physical proximity during device usage scored highest with a weighted mean of 2.64, followed by monitoring for age-appropriate content at 2.60, watching content together at 2.49, and engaging in shared media discussions at 2.39. Active participation in exploring educational digital platforms registered the lowest mean at 2.36. The findings indicate that while parents maintain physical presence near children during screen time, true interactive engagement with digital content remains minimal. Parents function primarily as physical supervisors rather than active learning partners, reflecting passive proximity wherein caregivers attend to personal or domestic tasks while nearby, which aligns with research by Syuraini et al. (2022) showing that parents frequently monitor device usage from a distance without actively participating in the learning software.

3.4 Status of Children's Developmental Skills

3.4.1 Cognitive Development

The evaluation of cognitive skills yielded an overall composite weighted mean of 3.20, interpreted as well-developed, with a low standard deviation of 0.04. The ability to identify and match visual patterns, shapes, and colors through digital interfaces earned the highest rating at a weighted mean of 3.32, followed by information retention and character recall from digital narratives at 3.30, digital sequencing tasks at 3.18, and vocabulary acquisition at 3.11. Persistence and self-regulation when encountering challenging digital problem-solving tasks scored lowest at 3.07. Interactive digital tools strongly support early visual-spatial discrimination and narrative memory, enabling children to excel in pattern recognition and recall. This aligns with research by Lo and Wang (2024), who established that integrating visual digital aids enhances early image cognition and spatial pattern identification. However, lower scores in persistence during complex tasks indicate that young learners experience frustration when digital tasks demand sustained problem-solving, underscoring that cognitive persistence requires intentional scaffolding beyond device interaction (Suggate & Martzog, 2022).

3.4.2 Social-Emotional Development

Social-emotional skills received an overall composite weighted mean of 2.73, placing them in the well-developed category, with a standard deviation of 0.15. Affective empathy and emotional engagement with digital narratives scored highest at a weighted mean of 3.03, followed by frustration tolerance during digital challenges at 2.93, voluntary prosocial resource sharing at 2.77, and patience during technical delays at 2.48. Emotional regulation and compliance during transitions away from screen time received the lowest rating at 2.46, falling into the still-emerging level. Early childhood learners exhibit a strong affective connection and empathy toward story-driven digital media, demonstrating emotional resonance with digital characters. This observation is supported by Radesky et al. (2020), who noted that well-designed early childhood media can enhance perspective-taking and empathy through narrative storytelling. Conversely, the emerging status of emotional regulation during device termination highlights screen removal as a primary locus of emotional dysregulation, confirming that transitioning away from engaging screens poses a significant developmental hurdle in self-regulation.

3.4.3 Fine-Motor Development

Fine-motor development obtained the highest rating among the skill domains, with an overall composite weighted mean of 3.28, indicating full mastery, and a standard deviation of 0.21. Intentional touchscreen gesture accuracy received the highest weighted mean of 3.49, followed by tactile scrolling precision at 3.39, hand-eye coordination during synchronized tasks at 3.30, and bilateral device stabilization at 3.16. Muscular endurance and physical stability when handling portable hardware recorded the lowest weighted mean of 3.08. The high level of touchscreen precision indicates that frequent interaction with modern mobile devices may contribute to the development of digital tactile dexterity and finger coordination. The strong performance in tapping, swiping, and scrolling suggests that users have developed effective control over touchscreen functions through repeated

interaction. However, the comparatively lower scores in hardware stability and muscular endurance point to a developmental gap between refined digital finger movements and the broader manual strength needed to handle and stabilize physical objects.

3.5 Predictive Relationship Between Variables

Multiple linear regression analysis demonstrated that the overall predictive model was statistically significant ($F=11.107$, $p=0.001$), leading to the rejection of null hypotheses H_{01} and H_{02} . The model produced a correlation coefficient of $R=0.609$, indicating a moderate positive predictive relationship, with $R^2=0.371$ and Adjusted $R^2=0.338$, proving that 37.1% of the variance in children's developmental skills is accounted for by the combination of communication frequency, rule consistency, active mediation, restrictive mediation, and co-viewing. The regression model is expressed through the following equation: $"DSC"=1.199+0.192("CF")+0.102("CHDR")+0.114("AM")+0.088("RM")+0.112("CV")$ Among individual predictors, communication frequency contributed the greatest predictive weight ($\beta=0.192$), followed by active mediation ($\beta=0.114$), co-viewing ($\beta=0.112$), consistency of home-school digital rules ($\beta=0.102$), and restrictive mediation ($\beta=0.088$).

The regression results establish that systematic home-school collaboration and structured parental mediation collectively drive child development in early education. Communication frequency serves as the most powerful catalyst, proving that active dialogue between educators and parents amplifies the effectiveness of home digital Management strategies. While these variables explain over a third of developmental variance, the remaining unexplained variance highlights the presence of unmeasured factors, underscoring the necessity for targeted intervention schemes that optimize communication channels and convert passive supervision into guided, active learning.

4. Conclusion & Recommendations

The study found that parent-teacher collaboration and digital habits significantly predict children's developmental skills, explaining 37.1% of the variance in developmental outcomes ($R = 0.609$). Communication frequency was the strongest predictor ($\beta = 0.192$), followed by active mediation, co-viewing, consistency of home-school digital norms, and restrictive mediation. Although restrictive mediation was the most commonly practiced style, active mediation, co-viewing, and consistent home-school rules were more strongly associated with the development of children's fine motor, cognitive, and social-emotional skills. These moderate associations point to the interrelation of home and school environments and show that regular, structured digital practices and consistent home-school communication are central to effective early childhood interventions. The findings also support the use of the ECD Digital Wellness Supplementary Material: A Parent-Teacher Intervention Guide to establish digital parameters and promote cooperation toward children's full developmental competency.

In line with these findings, school administrators are encouraged to institutionalize the ECD Digital Wellness Supplementary Material as a compulsory addendum to the Parent-Teacher Handbook, provide professional development for ECD teachers on communicating digital wellness initiatives to parents, and continue enforcing the "no-cellphone" policy on campus. ECD teachers are encouraged to give parents the list of suggested educational apps, use the monthly three-question quick-check log to track progress and advise parents, and reward learners in morning circles for following device-free rules at home. Parents and guardians are encouraged to use the device-free box to set physical and time limits at home, communicate regularly with teachers about their child's screen use, and co-view with their children using school-approved apps. Future researchers are encouraged to conduct a longitudinal study following learners into Grades 1-3 and to explore other factors that may account for the remaining 62.9% variance, such as parents' online literacy, type of digital content, unequal internet access, and the child's temperament.

5. Compliance with ethical standards

This study followed established ethical standards for research involving human respondents. Permission was secured through a formal letter to the School Administrators of Pillars of Faith Christian Academy and Noel Academy Christian of Sariaya, Philippines Incorporated, and participants were contacted only after approval and the appropriate ethical clearances were obtained. The two ECD teachers and fifty parents or guardians were informed of the study's aims, scope, and ethical issues, and each signed an Informed Consent Form acknowledging voluntary participation, the right to skip questions or withdraw at any time without penalty, and the absence of physical risk. In compliance with the Data Privacy Act, all data were coded and securely stored, and names were replaced with Coded Family ID Numbers (e.g., familyID-001) to ensure anonymity. Children's developmental scores were extracted from the schools' Official ECCD Summary Reports (Child's Record 2) with administrator approval, and findings were reported responsibly and transparently.

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