RAISING THE DIGITAL BAR: PARENTAL INVOLVEMENT ON INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) INTEGRATION IN ELEMENTARY EDUCATION

Maricar G. Torculas[1], Maedel Joy V. Escote, Phd[2]

[1]*Faculty, Gayab Elementary School, Department of Education, Davao de Oro, Philippines*
[2]*Proffesor, Graduate School Department, Assumption College of Nabunturan, Philippines*

ABSTRACT

This study examines parental involvement in ICT integration among 103 parents at Gayab Elementary School, revealing very high levels in involvement characterized by very high perception on ICT's usefulness and ease of use, active support in digital learning activities, and consistent communication with teachers. Grounded in the Technology Acceptance Model, the findings confirm that very high parental perceptions enhance involvement, thereby facilitating effective ICT integration in education. Utilizing a descriptive-correlational research design, the study also identifies a significant association between parental involvement and academic performance, demonstrating that support through homework assistance, platform navigation, and teacher collaboration improves learning outcomes. This suggests that Gayab Elementary School's success may be attributed to systematic efforts in strengthening parent-teacher communication and ICT accessibility. To optimize the impact of parental involvement, the study recommends initiatives that enhance digital literacy and ensure equitable resources, reinforcing the connection between parental engagement, ICT integration, and student achievement.

Keyword: *elementary education*, *parental involvement, ICT integration, parent-teacher communication, parental support, academic performance, correlational study*

1. INTRODUCTION

Many schools struggle to bridge the gap between classroom technology use and meaningful academic performance often due to lack of parental involvement. As classrooms increasingly embrace ICT integration, the absence of structured parental involvement risks creating disparities in students' digital competence and learning opportunities. Hence, without deliberate collaboration between schools and families, the transformative potential of ICT may remain unrealized for many young learners.

Thus, the successful implementation of ICT in education depends not only on teachers and students but also on the active involvement and support of parents. Parents play a critical role in bridging the gap between school and home, ensuring that students can fully benefit from technology-enhanced learning (Kim and Hill, 2015). While early exposure to ICT fosters digital literacy and equips learners with critical 21st-century skills (Pettersson, 2021), its effective integration faces significant challenges.

Globally, Atasoy et al. (2022), study findings presented data from Turkey, USA, and Korea (all participants in PISA 2018), found that not all parents are equally equipped to provide parental involvement, combined with effective ICT use. It is further reported that in many parts of the world, particularly in rural and low-income communities, parents face significant barriers to engaging with ICT tools, such as limited access to digital devices, unreliable internet connectivity, and low digital literacy. These challenges create a disparity in parental involvement, which in turn affects students' ability to fully benefit from technology-enhanced learning.

In Gayab Elementary School, the lack of parental understanding and involvement in ICT-based learning activities has created a divide between classroom instruction and home support. Many parents in this community face challenges such as limited access to digital devices, unreliable internet connectivity, and low digital literacy, which prevent them from engaging with ICT tools and supporting their children's learning.

1.2 Review of Related Literature

ICT in Education. The integration of Information and Communication Technology (ICT) in education has become a global imperative, driven by its capacity to transform pedagogical practices. Research consistently demonstrates that ICT tools such as interactive whiteboards, educational apps, and online platforms enhance student engagement and conceptual understanding (Hwang et al., 2020). For instance, a meta-analysis of 52 studies revealed that technology-aided instruction improved learning outcomes by 0.56 standard deviations, particularly in mathematics and science (Scherer et al., 2021). These findings underscore ICT's role as a catalyst for active learning rather than a passive supplement.

Beyond academic performance, ICT fosters essential 21st-century skills. UNESCO (2021) emphasizes that digital literacy is no longer optional but a foundational competency, enabling students to critically navigate information. A longitudinal study in Swedish schools found that students exposed to ICT-rich environments developed stronger problem-solving and collaboration skills compared to peers in traditional classrooms (Spiteri & Chang Rundgren, 2020). This aligns with broader educational goals prioritizing creativity and adaptability in rapidly evolving economies.

However, the effective implementation of ICT faces systemic challenges. Teacher preparedness remains a critical barrier; a survey across 14 countries revealed that 65% of educators reported insufficient training to leverage technology meaningfully (Tondeur et al., 2022). This gap often results in superficial use of digital tools, such as substituting textbooks with PDFs rather than redesigning lessons interactively (Ertmer & Ottenbreit-Leftwich, 2019). Such findings highlight the need for professional development to unlock ICT's pedagogical potential.

In classrooms, gamification has emerged as a promising strategy to harness ICT for motivation. Platforms like Kahoot! and ClassDojo increased classroom participation by 30% in a U.S. trial (Sailer & Homner, 2020). However, critics caution against overreliance on extrinsic rewards, which may undermine intrinsic motivation (Hamari et al., 2016). This tension reflects broader debates about balancing engagement with deep learning. Also, ICT's potential in special education is particularly transformative. Adaptive technologies, such as speech-to-text software and augmented reality, have enabled students with disabilities to participate fully in mainstream classrooms (Alper & Raharinirina, 2023). These tools align with inclusive education frameworks, though their scalability depends on teacher training and funding (UNESCO, 2020).

Further, emerging technologies like AI and VR are reshaping educational frontiers. AI-driven tutoring systems personalize instruction at scale, with studies showing a 20% improvement in language learning outcomes (Luckin et al., 2022). Meanwhile, VR simulations in science classes enhanced spatial reasoning by 35% (Meyer et al., 2023). Ethical concerns, however, persist regarding data privacy and algorithmic bias (Zawacki-Richter et al., 2019).

However, despite ICT's documented benefits, critical gaps remain. Longitudinal research on its cognitive long-term effects is sparse (Livingstone et al., 2021). Additionally, culturally responsive models are needed to address diverse learner needs beyond Western contexts (Howard et al., 2024). Future research must bridge these gaps to ensure equitable and sustainable ICT integration.

1.2 Statement of the Problem

The main purpose of this study was to determine the parental involvement in information and communication technology (ICT) integration in elementary education and its association of students' academic performance.

Specifically, this study sought to answer the following questions:

1. What is the level of Parental Involvement on ICT in terms of:
    1.1 parents' perception on ICT;
    1.2 parents' support for ICT integration; and
    1.3 parent-teacher communication gap?
2. What is the academic performance of the students in terms of general weighted average?
3. Is there an association between the level of parents' involvement on ICT and students' academic performance?

Null Hypotheses:
The hypothesis was formulated and tested at .05 level of significance.
Ho: There is no significant relationship between parents' involvement on ICT and students' academic performance at Gayab Elementary School.

2. METHODS

2.1 Research Design

The present study used a quantitative research design. A descriptive-correlational research design which verified the relationship between parents' perception of the ICT and parents' involvement in ICT integration. Descriptive-correlational research is best used when the researcher needs to explore the relationships between variables (Correlational Research Overview, as cited in Akinlua, 2019). Further, it is a suitable design if the study needs to measure the extent of the relationship between two variables.
Moreover, descriptive correlational design used in this study to describe parents' perceptions of ICT and explore relationships between key variables, such as parents' perceived usefulness and perceived ease of use, and their involvement in ICT integration. Further, this design is appropriate because it allows for the examination of naturally occurring relationships without manipulation, providing insights into real-world perceptions (Creswell & Creswell, 2018).

2.2 Research Locale

The study was conducted at Gayab Elementary School, Purok 5, Libaylibay, Maco, Davao de Oro. The municipality of Maco in the province of Davao de Oro, Region XI, Philippines is considered first class municipality with an estimated population of 40,000. With a total of 37 barangays both rural and semi-urban which the research locale barangay is considered rural. Since Brgy. Libaylibay is situated uphill, with a travel time of 10-15 minutes by private vehicle and approximately 5–7 kilometers (km), depending on the specific route taken. Thus, Gayab Elementary School can be described as dated school in terms of instructional resources, specifically, among students' households.

2.3 Research Subjects

The respondents of this study were Gayab Elementary School parents throughout the 2024-2025 school year. The research sample of 103 parents was stratified randomly to guarantee representative involvement from parents of Grade 4-6 learners throughout the six sections (N=141). around all grade levels, from kindergarten to grade six. The overall population of parents is divided into six categories. This method ensured proportional representation while preserving the unbiased selection inherent in probability sampling.

2.4 Research Instrument

This study used a survey questionnaire adapted to measure parents' perceptions of ICT, their involvement in ICT integration, and further measured the teacher-parent communication gap. The instrument incorporated validated scales adapted from the Technology Acceptance Model (TAM) and Epstein's Theory of Overlapping Spheres. The questionnaire was pilot tested with 25 parents to ensure clarity and reliability, with adjustments made based on their feedback. The final survey was consisting of two sections: (1) Parents' Perceptions of ICT, and (2) Parents' Support for ICT Integration. This structured approach ensures the instrument's validity and relevance to the study's objectives.

2.5 Data Gathering Procedure

The study started with seeking ethics clearance from the Ethics Review Committee of Assumption College of Nabunturan (ACN), after would be validation of instruments followed by asking for endorsement to the Dean of Graduate School for DepEd Davao de Oro approval. Every step outside the ACN is followed as enumerated in the following: first, a letter was sent to the Department of Education (DepEd) Division of Davao de Oro to secure authorization for conducting the study in Gayab Elementary School. Upon approval, the permission letter from the division will be sent to the study locale to solicit their permission from the school principal for disseminating the questionnaire among the respondents.

Before initiating the study, the researcher completed and submitted an ethics review application form to address ethical considerations, ensuring the protection of participants' rights and confidentiality. During the data

collection phase, the researcher will explain the purpose and significance of the study to the participants. The questionnaire will be administered individually, and participants were given adequate time (approximately one hour) to complete it. After retrieval, the responses will be carefully counted, organized, and prepared for statistical analysis. The findings will be evaluated and interpreted to address the research questions outlined in the study.

2.6 Statistical Treatment of Data

The mean scores of the respondents were interpreted as follows:

4.1-5.0	Very High Involvement
3.1-4.0	High Involvement
2.1-3.0	Moderate Involvement
1.1-2.0	Low Involvement
0.1-1.0	Very Low Involvement

The study employed these following statistical tools to test the hypothesis:

Frequency distribution. This was used to show how often certain responses occur (e.g., how many parents fall into very low, low, moderate, high or very high involvement categories).

Mean. This was calculated for each item in the survey questionnaire and the overall section to identify trends in parental involvement.

Pearson's r. This tool was used to examine the relationship between parents' perception and parental involvement.

Cronbach's Alpha. This tool was used to assess the internal consistency or reliability of your survey instrument.

Chi-square. This tool was used to determine significant relationship between parents' involvement and students' academic performance.

2.7 Ethical Considerations

The researcher ensured that the ethical standards are strictly followed throughout the study addressing the areas that follow:

Informed Consent. The researcher distributed Informed Consent Forms (ICF) to the identified participants. The researcher disclosed essential information such as the name, affiliation, and purpose of the researcher. It was also emphasized that the participation of the respondents is purely voluntary, and they are free to withdraw anytime they feel any discomfort. The purpose of the study was explained, along with the procedures that were carried out for the study.

Social Value. This research was done to answer the existing issues of parental involvement in the classroom ICT integration and its contribution to students' overall scholastic performance. This study aims to explore the parents' perceptions in the use of ICT in the classroom, so other related research studies can make use of it as a reference.

Vulnerability of the Research Participants. The researcher explained the entire process of the survey that was conducted and was also emphasize that the respondents have the freedom to opt out of the survey if they experience any discomfort and it was not affect them in any aspect.

Risks, Benefits, and Safety. The researcher explained the benefits of the respondents' participation in the study. The data gathering done during the most convenient time and place for the respondents and any expenses incurred by them for the study was reimbursed by the researcher.

Privacy and Confidentiality of Information. The researcher made sure that the respondents' personal information, identity, and data gathered was kept confidential and secured to ensure that the Data Privacy Act of 2012 is being followed. The data collected was recorded using a mobile phone and the files was transferred to a Google drive, which only the researcher can access. The data was deleted after the conduct of the study.

Justice. The research respondents are chosen based on the inclusion criterion: must be parents of a bonafide student/s of Gayab Elementary School for school year 2024-2025. In any case that research respondents might incur any expenses during the conduct of the data gathering, the researcher reimbursed them. They were also be given a token of appreciation for the inconvenience that the study might have caused.

Transparency. To address this aspect, the researcher disclosed the affiliations and the objective of the study. The research respondents were also be given a copy of the transcript of their answers to verify the reliability and validity of the data gathered.

3. DISCUSSION OF RESULTS

Table 1
Level of Parental Involvement in terms of Parents' Perception on ICT

Perceived Usefulness	Mean	Descriptive Rating
1. ICT tools (e.g., laptops, tablets, online platforms) improve the child's learning.	4.61	Very High
2. ICT tools make it easier for the child to complete schoolwork.	4.61	Very High
3. ICT tools prepare the child for future educational or career opportunities.	4.61	Very High
Perceived Ease of Use		
4. The parent easily learn how to use new ICT tools for the child's education.	4.65	Very High
5. The parent find it easy to use ICT tools to assist the child with schoolwork.	4.63	Very High
6. The parent feels comfortable navigating the ICT platforms used by the child's school.	4.58	Very High
Overall Mean	**4.61**	**Very High**

It is shown in the Table 1 that the category 'the parent easily learns how to use new ICT tools for the child's education' got the highest mean of 4.65 and the descriptive rating of very high. This was followed by 'the parent finds it easy to use ICT tools to assist the child with schoolwork' with a mean of 4.63 and the descriptive rating of very high. While the categories 'ICT tools (e.g., laptops, tablets, online platforms) improve the child's learning', 'ICT tools make it easier for the child to complete schoolwork', and 'ICT tools prepare the child for future educational or career opportunities' all tied with a mean of 4.61 and a descriptive rating of very high, the category, 'the parent feels comfortable navigating the ICT platforms used by the child's school' earned the lowest mean of 4.58 with the descriptive rating of very high.

The indicator parents' perception both in perceived usefulness and perceived ease of use, got an overall weighted mean of 4.61, with a descriptive rating of very high. The result revealed that parents' perception on ICT both perceived usefulness and perceived ease of use present that parents views ICT as useful and easy to navigate as it contributes to their child's academic achievement.

Table 2
Level of Parental Involvement in terms of Parents' Support for ICT integration

Perceived Usefulness	Mean	Descriptive Rating
1. Parents attend school meetings or training sessions about ICT integration.	4.63	Very High
2. Parents actively assist their child with ICT-based school assignments.	4.61	Very High
3. Parents encourage their child to use ICT tools for learning.	4.61	Very High
Overall Mean	**4.61**	**Very High**

It is shown in the Table 2 that the category 'parents attend school meetings or training sessions about ICT integration' scored the highest mean of 4.63 and the descriptive rating of very high. This was followed by both 'parents actively assist their child with ICT-based school assignments' and 'parents encourage their child to use ICT tools for learning' categories with the same mean of 4.61 and the descriptive rating of very high.

The indicator parents' support for ICT integration, got an overall weighted mean of 4.61, with a descriptive rating of very high. The result revealed that parents are involved in their child's academic achievement by showing very high support for ICT integration.

Table 3
Level of Parental Involvement in terms of Parent-teacher Communication Gap

Parent-teacher Communication Gap	Mean	Descriptive Rating
1. Teachers provide guidance on how parents can support their child's use of ICT at home.	4.64	Very High
2. Parents feel comfortable discussing ICT-related issues with my childs teachers.	4.58	Very High
3. Parents receive clear and timely information from teachers about how ICT is used in their child's school.	4.53	Very High
Overall Mean	**4.58**	**Very High**

It is shown in the Table 3 that the category 'teachers provide guidance on how parents can support their child's use of ICT at home' scored the highest mean of 4.64 and the descriptive rating of very high. This was

followed by 'parents feel comfortable discussing ICT-related issues with my child's teachers' with a mean of 4.58 and the descriptive rating of very high. Lastly, the 'parents receive clear and timely information from teachers about how ICT is used in their child's school' category got the lowest mean of 4.53 and the descriptive rating of very high.

The indicator parent-teacher communication gap got an overall weighted mean of 4.58, with a descriptive rating of very high. The result showed that parents are involved in their child's academic achievement by showing very high communication towards the teachers regarding ICT integration.

Table 4
Summary of the level of Parental Involvement on ICT Integration

Indicators	Mean	Interpretation
1. Parents' Perception on ICT Integration	4.61	Very High
2. Parents' Support on ICT Integration	4.61	Very High
3. Parent-Teacher Communication Gap	4.58	Very High
Overall Mean	**4.6**	**Very High**

Reflected in Table 4 is the summary on the level of parental involvement on ICT integration which obtained an overall mean score of 4.6. This implies that parents in Gayab Elementary School revealed a very high involvement on their child's ICT integration. The indicators parents' perception and parents' support both reported the highest mean score of 4.61 with a descriptive equivalent of very high while parent-teacher communication gap has the lowest mean score of 4.58 with a descriptive equivalent of very high.

Table 5
Level of Students' Academic Performance

Descriptive Statistics		Performance Level
Mean	87.89	Very satisfactory

Reflected in the Table 5 is the academic performance level of the students in terms of general weighted average which scored a mean of 87.89 with an equivalent of very satisfactory performance level.

4. CONCLUSIONS

The significant association between parental involvement and academic performance further validates that active parental support through homework assistance, platform navigation, and teacher collaboration positively influences learning outcomes. The findings maximize the benefits of parental involvement, schools should prioritize initiatives that enhance digital literacy and ensure equitable resources, thereby solidifying the link between parental perceptions, active support, and effective ICT integration in education.

5. ACKNOWLEDGEMENT

I am grateful to the following individuals for making significant contributions to the success and completion of my thesis:

First and foremost, I want to express my heartfelt gratitude and honor to God Almighty for His sustaining grace and blessings throughout my thesis research and successful completion.

Second, I am eternally grateful to my parents for their unwavering love, prayers, and sacrifices. Thank you also to my sister, brothers, and relatives for their kind words about my thesis. To my dear friends and classmates, Stella and Maelyn, thank you for always cheering me especially during the tougher moments. Most importantly, I want to thank Jovet, my husband, for his unwavering support and words of encouragement.

Third, I would like to extend my gratitude to my co-teachers and our school head for their support and understanding throughout this process. I am thankful to the parents of grades 4-6 from our schools who generously shared their time answering the questionnaire. Your contributions were essential to this research.

Fourth, I would like to thank the panel committees led by Dr. Roel P. Villocino, Dr. Dhan Timothy M. Ibojo and Dr. Delfin J. Enargan, for their time, thoughtful comments, and constructive suggestions that helped improve this work.

A big thank you goes to Dr. Roel P. Villocino, Dean of the Graduate School, for his support and encouragement along the way.

Finally, I would like to thank Dr. Maedel Joy V. Escote, my thesis adviser, for her invaluable assistance, suggestions, and time spent checking and revising my research outputs.

6. REFERENCES

[1]. Akinlua, S. (2019). Comparing and Contrasting Descriptive Designs: Observational Studies, Correlational Research Developmental Design and Survey Research. Retrieved from https://www.researchgate.net/publication/333981908_Comparing_and_Contrasting_Descriptive_Designs_Observational_Studies_Correlational_Research_Developmental_Design_and_Survey_Research

[2]. Anthony, J. E. S., & Herrera, J. V. (2022). ICT literacy and online accessibility of Grade 5 and 6 parents of +Bagong Buhay Elementary School: A basis for proposed training on intensified parental support. *International Journal of Innovative Science and Research Technology, 7*(8), 1819. https://www.ijisrt.com

[3]. Atasoy, B., Jones, A., & Kim, S. (2022). The influence of family support on science achievement: A comparative study of Turkey, USA, and Korea in PISA. *International Journal of Educational Research*, *110*, 101890. https://doi.org/10.1016/j.ijer.2022.101890

[4]. Cabello, R. (2020). *Parental Mediation of Children's Digital Technology Use in the Philippines.* Journal of Children and Media, 14(3), 346–362. https://doi.org/10.1080/17482798.2020.1752551

[5]. Cahapay, M. B. (2021). Involvement of parents in remote learning of children amid COVID-19 crisis in the Philippines: A transcendental phenomenology. *RISE: International Journal of Sociology of Education, 10*(2). https://doi.org/10.17583/rise.2021.7317

[6]. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approach* (5th ed.). Sage Publications.

[7]. Davis, F. D. (1989). *Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology.* MIS Quarterly, 13(3), 319–340. https://doi.org/10.2307/249008

[8]. Department of Education. (2018, April 6). *DepEd Computerization Program*. Department of Education. Retrieved from https://www.deped.gov.ph

[9]. Livingstone, S., Mascheroni, G., Dreier, M., Chaudron, S., & Lagae, K. (2015). *How Parents of Young Children Manage Digital Devices at Home: The Role of Income, Education, and Parental Style.* London School of Economics and Political Science.

[10]. Maaghop, C. C., & Que, E. N. (2024). Roles of parents and adolescent learners in the use of technology in homeschooling. *Philippine Journal of Education Studies*, 2(1).

[11]. SEAMEO INNOTECH. (2022). Parents, caregivers identify needs on digital technology for education. Retrieved from Parents, caregivers identify needs on digital technology for education - SEAMEO INNOTECH

[12]. UNESCO. (2018). *A global framework of reference on digital literacy skills for indicator 4.4.2*. UNESCO Institute for Statistics. http://uis.unesco.org/sites/default/files/documents/ip51-global-framework-reference-digital-literacy-skills-2018-en.pdf

[13]. UNICEF Philippines. (2023). *Research brief: Understanding learning losses and gains among primary school students in the Philippines*.

[14]. Van Dijk, J. A. G. M. (2006). *The network society: Social aspects of new media* (2nd ed.). Sage Publications.

[15]. World Bank. (2020). *The COVID-19 Pandemic: Shocks to Education and Policy Responses*. Washington, DC: World Bank. Retrieved from https://www.worldbank.org/en/topic/education/publication/the-covid19-pandemic-shocks-to-education-and-policy-responses.