

Information and Communication Technology (ICT) Utilization and Academic Performance of Pupils

Cristine Rose Sabordo

La Carlota City College

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ABSTRACT

This study examined the ICT Utilization and Academic Performance of Grade Three Pupils in selected public elementary school/s in Bacolod City during School Year 2026–2027. It specifically determined the pupils' profile, level of ICT utilization, academic performance, and the relationships between ICT utilization and academic performance as well as selected profile variables. The study employed a quantitative descriptive-correlational research design involving 269 Grade Three pupils selected through proportionate stratified random sampling. Data were gathered using a researcher-made questionnaire validated by five experts and obtained an overall Cronbach's Alpha of 0.91, indicating excellent reliability. Academic performance was based on approved official school records. Findings revealed that the pupils demonstrated a high level of ICT utilization, with an overall weighted mean of 4.02 (SD = 0.23) across the dimensions of Good Use of ICT, ICT Helps Me Learn, I Use ICT Wisely, and My Feelings About ICT. Their overall academic performance was Outstanding, with a mean of 90.23 (SD = 2.44). However, the results showed no significant relationship between ICT utilization and academic performance ($r_s = 0.00037$, $p = 0.995$). Among the profile variables, sex showed a significant relationship with ICT utilization ($p = 0.018$), while age, internet access, and frequency of ICT use showed no significant relationships. Access to ICT at home was constant among all respondents and therefore was not subjected to inferential testing. Based on the findings, an ICT Utilization Enhancement Program, Project SMART ICT, was proposed to strengthen responsible, purposeful, safe, and educational technology use among Grade Three pupils.

INTRODUCTION

This chapter presents the background of the study, the statement of the problem, the significance of the study, the scope and limitations, and the definition of terms.

Background of the Study

Information and Communication Technology (ICT) has become an essential component of basic education, providing learners with interactive, engaging, and learner-centered opportunities for learning. In the Philippine educational system, the Department of Education continues to strengthen technology integration through digital learning initiatives and the MATATAG Curriculum. Understanding how pupils utilize ICT is therefore important in examining how technology supports their learning and academic performance. Appropriate ICT utilization involves responsible, purposeful, and guided use of digital devices, educational applications, online resources, and other technological tools.

Recent studies indicated that purposeful ICT use and positive attitudes toward technology can support academic achievement, while excessive or non-academic use may reduce its educational value. Courtney, Karakus, and Ersozlu (2022) found that positive ICT attitudes and purposeful technology use are associated with stronger academic achievement, while Hu, Gong, Lai, and Leung (2022) reported that ICT engagement generally supports achievement but may show diminishing returns when use becomes excessive. Wang, Ni, Zhang, and colleagues (2024) found through a meta-analysis that educational use of digital devices is positively associated with academic performance, whereas excessive non-academic use may have adverse effects. Chen, Lin, and Chen (2024) emphasized the importance of self-regulation and digital learning habits. In the Philippine context, Guibone and Bercero (2021) reported that educational ICT exposure among elementary learners can contribute to improved learning performance when properly supervised, while Andres (2025) highlighted the importance of ICT competencies and responsible technology use among elementary pupils.

Despite the growing integration of ICT in elementary education, there remains a need for studies focusing specifically on Grade Three pupils and the relationship between their ICT utilization and academic performance. Younger learners are still developing foundational academic and digital competencies; therefore, evidence on how they use technology can help teachers and families design appropriate guidance and support. The present study addresses this need by examining ICT utilization among Grade Three pupils and its relationship with academic performance. Hence, this study sought to determine the ICT utilization of Grade Three pupils and its relationship with their academic performance. It specifically examined pupils' profile, the four dimensions of ICT utilization, their academic performance, and the relationships among these variables. The findings may provide useful information for teachers, school administrators, parents, and curriculum planners in strengthening responsible and purposeful ICT integration.

Theoretical Framework

This study is anchored on the Technology Acceptance Model (TAM) developed by Fred D. Davis (1989), the Social Cognitive Theory of Albert Bandura (1986), and the Constructivist Learning Theory of Jean Piaget (1972). These theories provide a strong foundation for explaining how Grade Three pupils' ICT utilization (ICT) may influence their academic performance.

The Technology Acceptance Model (TAM) proposed by Davis (1989) explains that an individual's acceptance and use of technology are primarily determined by two factors: perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which learners believe that using ICT improve their learning performance, while perceived ease of use pertains to the extent to which they believe that technology is simple and effortless to use. When pupils perceive ICT as beneficial and user-friendly, they are more likely to develop positive behaviors toward its utilization, resulting in increased engagement, motivation, and participation in learning activities. In the context of this study, TAM explains why Grade Three pupils who demonstrate positive ICT utilization are expected to achieve better academic performance.

This study is likewise supported by Social Cognitive Theory developed by Bandura (1986), which emphasizes that learning occurs through the continuous interaction of personal factors, environmental influences, and behavior. According to this theory, learners acquire knowledge not only through direct instruction but also by observing others, practicing learned behaviors, and receiving feedback from their environment. Teachers, parents, classmates, and digital learning environments significantly influence pupils' ICT utilization. Through appropriate guidance, supervision, and reinforcement, pupils develop responsible digital habits that contribute to improved academic achievement. Thus, the theory explains how behavioral patterns in ICT utilization are shaped by both individual and environmental factors.

Furthermore, the study is anchored on Constructivist Learning Theory by Piaget (1972), which posits that learners actively construct knowledge through meaningful experiences and interactions with their environment. ICT provides opportunities for learners to explore concepts, solve problems, collaborate with peers, and engage in interactive learning activities that enhance understanding. Educational applications, multimedia resources, and digital platforms encourage active participation, allowing learners to build knowledge based on prior experiences. As pupils actively engage with ICT in meaningful ways, they become more motivated and capable of improving their academic performance.

The integration of these theories provides a comprehensive explanation of the relationship between pupils' ICT utilization and their academic performance. The Technology Acceptance Model explains pupils' willingness to use technology, Social Cognitive Theory describes how their ICT utilizations are influenced by personal and environmental factors, while Constructivist Learning Theory explains how meaningful ICT experiences facilitate learning. Together, these theories support the assumption that responsible, purposeful, and positive ICT utilization contributes to improved academic performance among Grade Three pupils.

Conceptual Framework

The conceptual framework of this study presents the relationship among the respondents' profile, behavior in ICT utilization, academic performance, and the proposed intervention. It illustrates how the profile

characteristics of Grade Three pupils may be associated with their behavior in ICT utilization and how the behavior in ICT utilization is examined in relation to academic performance. The findings serve as the basis for developing an appropriate ICT Utilization Enhancement Program.

The profile variables considered in this study are age, sex, access to ICT at home, most frequently used ICT device, internet access, and frequency of ICT use. These characteristics are examined to determine whether differences or relationships exist between pupils' profiles and their ICT utilization.

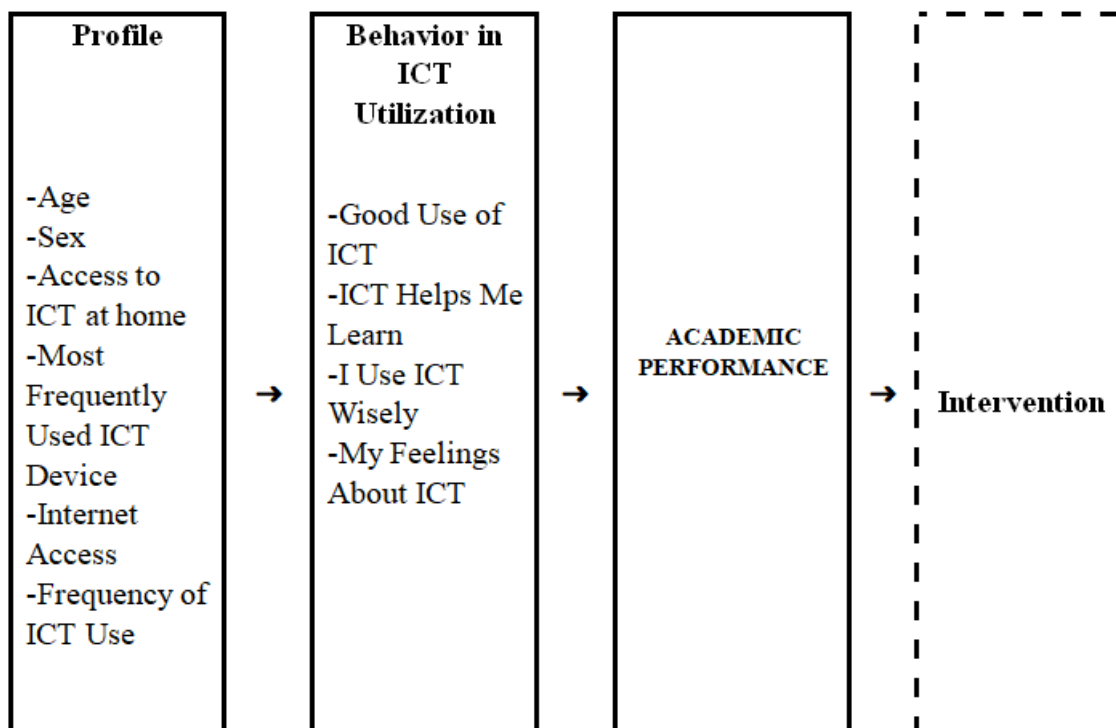
Behavior in ICT Utilization is measured through four dimensions: (1) Good Use of ICT, (2) ICT Helps Me Learn, (3) I Use ICT Wisely, and (4) My Feelings About ICT. These dimensions reflect pupils' responsible use of technology, educational use of ICT, wise management of technology use, and attitudes toward learning with ICT.

The dependent variable is the academic performance of Grade Three pupils, measured using their recorded academic performance for the period covered by the study. Academic performance serves as the indicator of the learners' educational achievement.

The framework examines whether ICT utilization is significantly related to academic performance and whether the respondents' profile is significantly related to their behavior in ICT utilization. Because the study uses a descriptive-correlational design, the relationships are interpreted as associations and not as causal effects.

Finally, the findings provide a basis for intervention, particularly in developing school-based activities, teacher strategies, and parent-support initiatives that encourage responsible and purposeful ICT utilization. The framework therefore emphasizes the importance of examining ICT utilization together with learner characteristics and academic performance.

Figure 1. Schematic Diagram of the Study.



Statement of the Problem

This study aimed to determine the ICT utilization of Grade Three pupils and its relationship with their academic performance.

Specifically, this study sought to answer the following questions:

1. What is the profile of the Grade Three pupils in terms of:
 - a. Age;
 - b. Sex;
 - c. Access to ICT at home;
 - d. Most frequently used ICT device;
 - e. Internet access; and f. Frequency of ICT use?
2. What is the level of ICT utilization of the Grade Three pupils in terms of:
 - a. Good Use of ICT;
 - b. ICT Helps Me Learn;
 - c. I Use ICT Wisely; and
 - d. My Feelings About ICT?
3. What is the level of academic performance of the Grade Three pupils?
4. Is there a significant relationship between the profile of the respondents and their ICT utilization?
5. Is there a significant relationship between ICT utilization and academic performance?
6. Based on the findings of the study, what ICT Utilization Enhancement Program may be proposed?

Hypothesis of the Study

This study was guided by the following null hypotheses, tested at the 0.05 level of significance:

1. There is no significant relationship between ICT utilization and academic performance.
2. There is no significant relationship between the profile of the respondents and their ICT utilization.

Scope and Limitations of the Study

This study focused on 269 Grade Three pupils in determining their ICT utilization and academic performance. Specifically, it examined the respondents' profile in terms of age, sex, access to ICT at home, most frequently used ICT device, internet access, and frequency of ICT use; the level of ICT utilization in terms of Good Use of ICT, ICT Helps Me Learn, I Use ICT Wisely, and My Feelings About ICT; and the level of academic performance. It also determined whether the respondents' profile was significantly related to ICT utilization and whether ICT utilization was significantly related to academic performance. The findings served as the basis for the proposed ICT Utilization Enhancement Program.

The study was limited to the 269 Grade Three pupils included in the approved sample from the selected public elementary school/s in Bacolod City during School Year 2026–2027. It did not include pupils from other grade levels or learners outside the approved research locale. The study was also limited to the variables identified in the conceptual framework and did not examine other factors that may influence academic performance, such as parents' educational attainment, socioeconomic status, teachers' instructional strategies, learner motivation, learning styles, home learning environment, or psychological factors. ICT utilization was measured using the researcher-made questionnaire, while academic performance was based on the official academic records approved for use in the study. Therefore, the findings are limited to the respondents and locale covered by the investigation and should not be generalized beyond comparable populations without further validation.

Significance of the Study

The findings of this study may benefit the following:

Curriculum Planners. The findings may help curriculum developers design more responsive and ICT programs that incorporate appropriate use of technology.

Department of Education. The study may provide information on pupils' ICT utilization and academic performance that can inform ICT-related educational programs, policies, and initiatives.

Education Program Supervisor. The findings may provide insights that can support decisions regarding ICT integration, resource allocation, teacher development, and learner support.

Teachers. The findings may help teachers understand pupils' ICT utilization and design meaningful, learner-centered activities that promote responsible technology use and academic learning.

School Administrators. The results of this study serve as a basis for planning professional development programs, trainings, and support systems that address the needs of teachers in ICT integration.

Pupils. The study may benefit learners indirectly through improved ICT-supported learning activities, responsible technology practices, and appropriate academic support.

Researcher. The findings may provide the researcher as the beneficiary of this study with a deeper understanding of pupils' ICT utilization and its relationship with academic performance and may strengthen the researcher's skills in educational research and intervention planning.

Definition of Terms

For clarity and understanding, the following terms are defined conceptually and operationally.

Academic Performance. Conceptually, academic performance refers to the level of achievement demonstrated by a learner in school. Operationally, in this study, it refers to the academic rating recorded for the respondents for the period covered by the study.

Access to ICT at Home. Conceptually, access to ICT at home refers to the availability and opportunity to use digital devices within the household. Operationally, it refers to whether the pupils have a cellphone, tablet, or computer at home, as indicated in the profile questionnaire.

Age. Conceptually, age refers to the length of time a person has lived, expressed in completed years. Operationally, it refers to the chronological age of the Grade Three pupils indicated in the profile questionnaire.

Frequency of ICT Use. Conceptually, frequency of ICT use refers to how often learners use digital technologies. Operationally, it refers to how often the pupils use ICT, categorized in the questionnaire as every day, 3–5 times a week, 1–2 times a week, or rarely.

Good Use of ICT. Conceptually, good use of ICT refers to responsible and appropriate use of digital technology for learning and safe technology practices. Operationally, it refers to the five questionnaire statements under this dimension.

ICT Helps Me Learn. Conceptually, ICT Helps Me Learn refers to learners' use and perception of technology as a support for understanding lessons and completing schoolwork. Operationally, it refers to the five questionnaire statements under this dimension.

Information and Communication Technology (ICT). Conceptually, ICT refers to digital technologies used to create, access, process, communicate, and share information. Operationally, it refers to the devices, applications, websites, and digital resources considered in the study.

Internet Access. Conceptually, internet access refers to the availability of connectivity that enables learners to access online information and educational resources. Operationally, it refers to whether the pupils have internet access at home, as indicated in the profile questionnaire.

I Use ICT Wisely. Conceptually, wise ICT use refers to managing technology responsibly, balancing study and recreational use, and using ICT purposefully. Operationally, it refers to the five questionnaire statements under this dimension.

My Feelings About ICT. Conceptually, feelings about ICT refer to learners' attitudes and perceptions toward learning with digital technology. Operationally, it refers to the five questionnaire statements under this dimension.

Sex. Conceptually, sex refers to the biological classification of individuals as male or female. Operationally, it refers to the classification indicated by the pupils in the profile questionnaire.

REVIEW OF RELATED LITERATURE AND STUDIES

This chapter presents the different literature and studies reviewed by the researcher that are found to be related to the present study. The reviewed literature and studies provide the theoretical and empirical foundations for understanding the relationship between the ICT utilization of Grade Three pupils and their academic performance.

ICT Utilization

The integration of Information and Communication Technology (ICT) has transformed educational practices by providing learners with greater access to digital resources, interactive learning experiences, and opportunities for collaborative learning. As technology continues to evolve, schools have increasingly adopted ICT as an essential instructional tool to improve learners' academic achievement and develop 21st-century skills. Consequently, pupils' ICT utilization has become an important factor in determining the effectiveness of technology integration in the classroom.

According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2023), ICT enhances learners' engagement, promotes active participation, and supports personalized learning experiences when used appropriately. The organization emphasized that technology enables learners to access educational materials beyond the traditional classroom, thereby improving learning opportunities and academic outcomes. However, UNESCO also noted that the effectiveness of ICT depends on learners' responsible use of technology and adequate guidance from teachers and parents.

Similarly, the Organisation for Economic Co-operation and Development (OECD, 2023) reported that students who use digital technologies purposefully for educational activities generally demonstrate better academic performance than those who use ICT primarily for entertainment. The report further explained that moderate and meaningful ICT utilization enhances learners' problem-solving skills, critical thinking, and motivation to learn. Nevertheless, excessive or inappropriate technology use may result in distractions and reduced academic achievement, highlighting the importance of developing responsible ICT utilization among learners.

Studies by Courtney, Karakus, and Ersozlu (2022) found that learners' positive attitudes toward ICT significantly influence their academic performance, particularly in mathematics and science. Their study revealed that students who perceived technology as useful and easy to use exhibited greater learning engagement and achieved higher academic outcomes. The researchers concluded that positive ICT utilization, rather than the mere availability of technology, plays a significant role in improving learners' educational performance.

Likewise, Li and Zhu (2023) emphasized that students' digital engagement serves as a mediator between ICT utilization and academic achievement. Their findings indicated that learners who actively participate in digital learning activities, complete technology-assisted assignments, and utilize online educational resources are more likely to perform better academically than those who use ICT primarily for recreational purposes.

Furthermore, Wang et al. (2024) conducted a meta-analysis examining the relationship between ICT utilization and students' academic achievement. The researchers concluded that responsible and educational use of ICT positively influences academic performance across different educational levels. They emphasized that learners' self-regulation, digital literacy, and positive attitudes toward technology contribute significantly to successful learning outcomes.

In the Philippine context, the Department of Education (DepEd, 2024) continues to strengthen ICT integration through the implementation of digital learning initiatives and the MATATAG Curriculum. The department recognizes ICT as an essential tool for enhancing learners' digital literacy, collaboration, creativity, and academic performance. Through various technology-assisted learning programs, learners are encouraged to use digital resources responsibly while developing competencies necessary for lifelong learning.

These studies suggest that pupils' ICT utilization significantly influences their learning experiences and academic success. Learners who demonstrate responsible ICT practices, positive attitudes toward technology, and effective use of digital resources are more likely to achieve higher academic performance. Consequently, examining the ICT utilization of Grade Three pupils is essential in identifying appropriate interventions that promote responsible technology use and improve learning outcomes.

ICT Utilization and Age of the Respondents

Age is considered an important demographic variable that may influence learners' cognitive development, technology adoption, and learning behaviors. During the elementary years, children gradually develop the cognitive and psychomotor skills necessary to interact effectively with digital technologies. As learners mature, they become more capable of navigating educational applications, searching for information, and using technology to support classroom learning. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO) (2023), age-appropriate exposure to digital technologies helps develop learners' digital competencies and prepares them for lifelong learning. Similarly, studies have shown that younger learners benefit from structured and guided ICT integration that matches their developmental stage and learning needs.

In the Philippine setting, the Department of Education (DepEd, 2024) recognizes that ICT integration should be appropriate to learners' developmental level under the MATATAG Curriculum. The department encourages teachers to provide age-appropriate digital learning experiences that promote digital literacy, creativity, communication, and collaboration among elementary learners. DepEd emphasized that technology should enhance learners' academic development while ensuring responsible and safe digital practices.

A study conducted by Udto and Kusain (2023) involving elementary learners in the Philippines found that age influences learners' confidence and participation in technology-assisted instruction. Older pupils demonstrated greater independence in navigating educational applications, completing online activities, and utilizing digital resources for classroom learning. However, younger learners required more structured guidance from teachers to maximize the educational benefits of ICT integration.

Similarly, Esmaquilan, Edaño, and Vasquez (2023) reported that learners' developmental readiness significantly contributes to successful ICT utilization in public elementary schools. Their findings showed that pupils who possessed greater cognitive maturity and digital competence actively participated in technology-based classroom activities and achieved better academic performance. The researchers emphasized the importance of providing ICT instruction that corresponds with learners' age and developmental needs.

A Philippine study by Alvarez and Caballes (2022) on elementary learners' digital literacy found that age positively influences learners' ICT competencies, particularly in information searching, digital communication, and online collaboration. The researchers observed that learners in higher elementary grade levels exhibited greater confidence in utilizing digital learning platforms than younger pupils, primarily because of increased exposure to educational technologies both in school and at home.

Moreover, UNICEF Philippines (2021) reported that introducing children to technology at an early age can improve digital literacy and learning outcomes when supported by parents, teachers, and schools. The report

emphasized that younger learners require guidance in developing responsible online behavior, digital citizenship, and safe internet practices to maximize the educational value of ICT.

Another study by Scherer and Siddiq (2021) explained that as learners mature, they develop stronger self-management skills that enable them to regulate screen time, prioritize educational tasks, and utilize ICT more effectively for academic purposes. Recent studies also suggest that age influences learners' self-regulation and digital responsibility. These self-regulatory skills contribute to higher academic achievement and more responsible technology use.

ICT Utilization and Sex of the Respondents

Information and Communication Technology (ICT) utilization in education has become an important factor influencing learners' behavior, engagement, and academic performance. However, the extent to which learners utilize ICT may differ according to demographic characteristics such as sex or gender. Understanding gender differences in ICT usage provides insights into whether male and female learners demonstrate similar opportunities, behaviors, and experiences when interacting with digital learning resources.

Recent literature emphasizes that learner characteristics and educational experiences may be associated with ICT utilization. Scherer and Siddiq (2021) noted that differences in digital competence and technology use can be related to learners' characteristics and experiences. This supports the inclusion of sex as a profile variable in the present study.

In the Philippine context, recent evidence emphasizes that equitable access, digital experience, and educational support can shape how learners participate in technology-supported learning. DepEd (2024) likewise promotes inclusive and age-appropriate ICT integration under the MATATAG Curriculum. These considerations support the inclusion of sex as a profile variable in examining ICT utilization among Grade Three pupils.

Recent Philippine research has likewise highlighted the importance of teacher support, digital resources, and users' ICT competencies in successful technology integration. These factors provide context for examining whether ICT utilization differs across learner profile groups. Recent literature emphasizes that learner characteristics and educational experiences may be associated with ICT utilization. Scherer and Siddiq (2021) noted that differences in digital competence and technology use can be related to learners' characteristics and experiences. This supports the inclusion of sex as a profile variable in the present study.

Recent studies on ICT utilization indicate that learners' technology experiences, perceptions, and patterns of use may vary across demographic groups. In the present study, sex is therefore included as a profile variable to determine whether a significant difference or relationship exists in ICT utilization.

Recent international literature recognizes that differences in technology participation may arise from learners' experiences, confidence, opportunities, and educational environments. Such findings support examining sex as one of the profile variables in the present study without assuming that one group is inherently more capable than the other. Based on these studies, sex or gender is considered a relevant demographic variable in examining ICT utilization among learners. Existing literature indicates that male and female learners may differ in their frequency of technology use, confidence, purposes of ICT engagement, and behavioral responses toward digital learning tools. However, other studies reveal that when learners have equal access and support, gender differences become less significant. Therefore, investigating ICT utilization according to the sex of Grade Three learners may provide meaningful information regarding whether technology affects learners' classroom behavior and academic performance regardless of gender.

ICT Utilization and Access to ICT at Home

Access to ICT at home plays a significant role in learners' educational experiences because it provides opportunities to practice digital skills beyond the classroom. Learners who have access to computers, tablets, smartphones, and internet connectivity are more likely to engage in independent learning, complete assignments efficiently, and explore additional educational resources. Ben Youssef, Dahmani, and Ragni (2022) emphasized

that ICT access and digital skills are associated with students' educational experiences and academic performance, while also noting that the benefits of technology depend not only on availability but also on the learners' ability to use ICT effectively.

Ben Youssef, Dahmani, and Ragni (2022) emphasized that access to ICT and digital skills are associated with educational experiences, while the benefits of technology depend on learners' ability to use ICT effectively. This supports examining access to ICT at home together with ICT utilization rather than treating device availability as the only indicator of digital inclusion.

Chen, Lin, and Chen (2024) emphasized the importance of self-regulation and digital learning habits in technology-supported learning. This supports the view that the educational value of ICT depends on how learners use available digital resources, not simply on the presence of a device.

UNICEF Philippines (2021) emphasized that children's digital learning opportunities are affected by access to appropriate technology and support from families, teachers, and schools. This supports examining home access as one of the profile variables in the present study.

UNICEF Philippines (2021) likewise emphasized the importance of supportive home and school environments in children's digital learning. Appropriate guidance and access to learning resources can help learners use technology more productively for educational purposes.

UNESCO (2023) emphasized that meaningful digital learning requires not only access to technology but also appropriate support, relevant digital resources, and opportunities for learners to apply technology in educational contexts.

UNESCO (2023) reported that digital inclusion requires attention to access, quality digital resources, and the support needed for learners to use technology meaningfully. This is relevant to the present study because ICT access at home may affect learners' opportunities to engage with digital resources.

In addition, a 2023 study on educational ICT resources, student engagement, and academic performance found that home ICT resources were strongly associated with students' cognitive-motivational engagement. The researchers reported that home ICT resources were particularly related to students' engagement, although the relationship between ICT resources and academic performance was complex. This finding indicates that access to ICT at home can influence students' engagement and learning behavior, but the educational value of technology depends on how learners actually use available resources. Wang, Ni, Zhang, and colleagues (2024) emphasized that the educational value of digital devices depends on purposeful educational use and the context in which technology is integrated. This reinforces the importance of examining both ICT access and ICT utilization. Ben Youssef, Dahmani, and Ragni (2022) emphasized that ICT access should be considered together with digital skills and the quality of technology use. This supports examining access and utilization as related but distinct aspects of pupils' technology experiences.

Recent reports on digital development continue to emphasize that access to internet connectivity remains an important consideration in digital learning. The International Telecommunication Union (2023) highlighted the continuing importance of connectivity and equitable access to digital technologies. This supports the inclusion of internet access as a profile variable in the present study.

ICT Utilization and Internet Access

Internet access has become an essential component of modern education because it enables learners to obtain information, communicate with teachers and classmates, and participate in digital learning environments. According to the International Telecommunication Union (2023), reliable internet connectivity supports equitable access to quality education and digital learning resources. Nevertheless, research indicates that the educational benefits of internet access depend largely on how learners use online resources. Students who use the internet primarily for educational purposes generally achieve better learning outcomes than those who use it mainly for entertainment.

ICT Utilization and Frequency of ICT Use

The frequency with which learners use ICT influences the development of their digital literacy and learning habits. Moderate and purposeful ICT use can strengthen problem-solving skills, increase engagement, and improve academic performance. Conversely, excessive technology use may lead to distraction and reduced academic achievement. Wang et al. (2024) reported that educational use of digital devices positively affects academic performance, whereas prolonged non-academic use may have negative effects. These findings emphasize that the quality and purpose of ICT use are more important than the amount of time learners spend using technology.

RESEARCH METHODOLOGY

This section described the research design, subject and respondents of the study, population and sample size, sampling techniques, and procedures that include data gathering, data analysis, statistical treatment, validity and reliability of the research instruments.

Research Design

This study employed a quantitative research approach utilizing a descriptive-correlational research design. The design was appropriate because it enabled the researcher to describe the ICT utilization of Grade Three pupils and examine the relationships among the study variables without manipulating them. The design allowed measurable data to be gathered through a structured questionnaire and analyzed using appropriate descriptive and inferential statistics. The correlational component was used to determine whether a significant relationship existed between the respondents' profile and ICT utilization and between ICT utilization and academic performance. The findings served as the basis for the proposed intervention program. The quantitative descriptive-correlational design was suitable because it allowed the researcher to gather measurable data, describe the variables, and examine their statistical relationships objectively.

Subject and Respondents of the Study

The respondents of this study were the 269 Grade Three pupils included in the approved sample from the selected public elementary school/s in Bacolod City during School Year 2026–2027. They were selected because they were actively engaged in classroom learning where ICT was integrated into instructional activities.

The respondents provided information regarding age, sex, access to ICT at home, most frequently used ICT device, internet access, and frequency of ICT use. They also answered a researcher-made questionnaire designed to assess ICT utilization in terms of Good Use of ICT, ICT Helps Me Learn, I Use ICT Wisely, and My Feelings About ICT. Academic performance was obtained from the approved official school records with the required permissions and consent.

The respondents were selected using the approved sampling procedure. The data gathered were used to determine the relationships among the study variables and to serve as the basis for the proposed intervention program.

Population and Sample Size

The population of the study consisted of the Grade Three pupils covered by the approved research population in the selected public elementary school/s in Bacolod City during School Year 2026–2027. The final sample consisted of 269 respondents.

Sampling Technique

The study employed the approved proportionate stratified random sampling procedure. Eligible Grade Three pupils were grouped according to the approved strata, and respondents were selected proportionately and randomly to obtain the final sample of 269 pupils.

The approved sampling procedure was followed to ensure that eligible pupils had an appropriate opportunity for inclusion in the study. The final sample consisted of 269 respondents.

Data Gathering Instruments

The primary instrument used in this study is a researcher-made questionnaire designed to gather the necessary data from the Grade Three pupils. The questionnaire is developed based on the objectives of the study and an extensive review of related literature and studies on ICT utilization and academic performance. It is written using simple and age-appropriate language to ensure that the respondents can easily understand and answer each item.

The questionnaire consisted of two administered parts. Part I gathered the respondents' profile, including age, sex, access to ICT at home, most frequently used ICT device, internet access, and frequency of ICT use. Part II measured ICT utilization through Good Use of ICT, ICT Helps Me Learn, I Use ICT Wisely, and My Feelings About ICT using a five-point Likert scale. Academic performance was obtained separately from approved official school records.

Before actual administration, the questionnaire underwent content validation by five experts in educational research, ICT, and elementary education to determine its clarity, relevance, appropriateness, and alignment with the study objectives. The revised questionnaire was pilot-tested among 30 Grade Three pupils who were not included in the final sample. Internal consistency was then examined using Cronbach's Alpha.

The validated and reliable questionnaire served as the primary instrument for collecting data on ICT utilization and the study's relationship with academic performance.

Validity and Reliability of the Research Instrument

Prior to the actual data gathering, the researcher-made questionnaire underwent content validation to determine its relevance, clarity, appropriateness, and alignment with the objectives of the study. The instrument was evaluated by five (5) experts in educational research, Information and Communication Technology (ICT), and elementary education. Their comments and recommendations were incorporated to improve the quality of the questionnaire before its final administration. The Content Validity Index (CVI) was computed, yielding an Item-Level Content Validity Index (I-CVI) of 0.96 and a Scale-Level Content Validity Index (S-CVI) of 0.98, indicating excellent content validity.

After the validation process, the revised questionnaire was pilot-tested among 30 Grade Three pupils who possessed characteristics similar to the actual respondents but were not included in the final study. The pilot test was conducted to determine the internal consistency of the instrument. Reliability was measured using Cronbach's Alpha.

The results of the reliability analysis revealed an overall Cronbach's Alpha coefficient of 0.91, indicating excellent internal consistency. The reliability coefficients for each dimension of the instrument are presented below.

Dimension	No. of Items	Cronbach's Alpha	Interpretation
Good Use of ICT	5	0.89	Good
ICT Helps Me Learn	5	0.90	Excellent
I Use ICT Wisely	5	0.92	Excellent
My Feelings About ICT	5	0.91	Excellent
Overall Instrument	20	0.91	Excellent Reliability

Based on the findings, the researcher-made questionnaire demonstrated excellent internal consistency and was considered reliable for the conduct of the study. Since the overall reliability index exceeded the acceptable criterion of 0.70, the instrument was deemed appropriate for the actual data collection.

Data Gathering Procedure

The researcher obtained the required approvals from the Graduate School and the appropriate education authorities before conducting the study. After approval, the researcher coordinated with the concerned school personnel and Grade Three teachers regarding the schedule for questionnaire administration.

Before administering the research instrument, informed consent from parents or legal guardians and assent from the Grade Three pupils were obtained. The purpose, procedures, voluntary nature of participation, and confidentiality of the study were explained clearly to the participants.

The validated researcher-made questionnaire was administered to the selected respondents during the scheduled data-collection period. The researcher provided clear instructions and clarified unfamiliar terms when necessary.

After retrieval, the questionnaires were checked for completeness and accuracy. Academic-performance data were obtained from the approved official school records. The data were organized, encoded, tabulated, and analyzed using the appropriate statistical procedures. The results served as the basis for the proposed ICT Utilization Enhancement Program.

Data Analyses

The descriptive and inferential statistical analyses were used to organize, analyze, and interpret the data gathered in this study.

For Statement of the Problem 1, frequency counts and percentages were used to describe the profile of the Grade Three pupils in terms of age, sex, access to ICT at home, most frequently used ICT device, internet access, and frequency of ICT use.

For Statement of the Problem 2, the mean and standard deviation were used to determine the level of ICT utilization in terms of Good Use of ICT, ICT Helps Me Learn, I Use ICT Wisely, and My Feelings About ICT.

For Statement of the Problem 3, the mean and standard deviation were used to describe the academic performance of the Grade Three pupils based on the approved academic records.

Formula:

$$\bar{X} = \frac{\sum X}{N}$$

Where:

- $\bar{X}$ = Mean
- $\sum X$ = Sum of the academic performance scores
- N = Total number of respondents

Scale	Description	Mean Score Range	Interpretation	Verbal Description
5	Always	4.21 – 5.00	Very High	ICT utilization is always manifested by the pupils.

4	Often	3.41 – 4.20	High	ICT utilization is often manifested by the pupils.
3	Sometimes	2.61 – 3.40	Moderate	ICT utilization is sometimes manifested by the pupils.
2	Rarely	1.81 – 2.60	Low	ICT utilization is rarely manifested by the pupils.
1	Never	1.00 – 1.80	Very Low	ICT utilization is never manifested by the pupils.

For Statement of the Problem 4, the Spearman rank-order correlation coefficient was used to determine whether a significant relationship existed between the behavior in ICT utilization and academic performance. The test was selected because the variables were analyzed using ranked/ordinal measures as reported in Chapter 4.

Formula:

$$r_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

Where:

r_s = Spearman Rank-Order Correlation Coefficient

$\sum d^2$ = Sum of the squared differences between the paired ranks of the two variables

d = Difference between the ranks of each pair of observations

n = Number of paired observations (respondents)

Formula

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Where:

χ^2 = Chi-Square test statistic

$\sum$ = Summation of all computed values

O = Observed Frequency

E = Expected Frequency

For Statement of the Problem 5, the inferential procedures reported in Chapter 4 were used to examine the relationship between the respondents' profile and their behavior in ICT utilization. Pearson correlation was used for age; Pearson chi-square was used for sex; no inferential statistic was computed for access to ICT at home because the variable was constant; and chi-square tests were used for internet access and frequency of ICT use. Most frequently used ICT device was retained as a descriptive profile variable and was not subjected to inferential testing; consequently, no inferential result for this variable is reported.

The hypotheses were tested at the 0.05 level of significance. The results were presented in tables and interpreted according to the objectives of the study. The findings served as the basis for conclusions, recommendations, and the proposed ICT Utilization Enhancement Program.

Presentation, Analyses, And Interpretation Of Data

This chapter deals with the presentation, analysis, and interpretation of data gathered to answer the problems formulated for the investigation. The presentation and analysis of data and the corresponding discussions followed were arranged in the following manner.

Profile of the Respondents

This section presents the demographic profile of the respondents. It includes the respondents' age, sex, access to Information and Communication Technology (ICT) devices at home, availability of internet connection, most frequently used ICT device, and frequency of ICT utilization.

Table 1. Frequency and Percentage Distribution of the Grade Three Pupils According to Profile

Profile	Category	F	%
Age	8 years old	245	91.08
	9 years old	15	5.58
	10 years old	9	3.35
	Total	269	100.00
Sex	Male	134	49.81
	Female	135	50.19
	Total	269	100.00
Access to ICT at Home	Yes	269	100.00
	No	0	0.00
	Total	269	100.00
Most Frequently Used ICT Device	Cellphone	220	81.78
	Tablet	30	11.15
	Laptop	13	4.83
	Computer	6	2.23
	Total	269	100.00
Internet Access	Yes	263	97.77
	No	6	2.23
	Total	269	100.00
Frequency of ICT Use	3–5 times a week	242	89.96
	1–2 times a week	18	6.69

	Rarely	9	3.35
	Total	269	100.00

Table 1 shows the frequency and percentage distribution of the respondents in terms of age, sex, availability of ICT devices at home, most frequently used ICT device, internet accessibility at home, and frequency of ICT utilization.

In terms of age, the data indicate that the majority of the respondents were 8 years old, comprising 245 (91.08%) of the total respondents, followed by 9 years old with 15 (5.58%), while only 9 (3.35%) were 10 years old. This implies that most of the respondents belong to the expected age bracket of Grade Three learners.

In terms of sex, the findings reveal a nearly equal distribution between male and female respondents. Female pupils slightly outnumbered their male counterparts with 135 (50.19%), while 134 (49.81%) were male, indicating a balanced representation of both sexes in the study.

In terms of the availability of ICT devices at home, the findings show that all 269 (100.00%) respondents have access to a cellphone, tablet, or computer, while none reported having no available device. This indicates that every respondent has access to at least one ICT device that can be utilized for educational and personal purposes.

When grouped according to the ICT device most frequently used, the majority of the respondents preferred using a cellphone, accounting for 220 (81.78%), followed by tablet with 30 (11.15%), laptop with 13 (4.83%), and computer with 6 (2.23%). This implies that the cellphone remains the most accessible and commonly used digital device among Grade Three pupils.

In terms of internet accessibility at home, 263 (97.77%) respondents reported having internet access, while only 6 (2.23%) indicated otherwise. The findings suggest that most respondents have sufficient internet connectivity, enabling them to access digital learning resources and online educational activities.

In terms of the frequency of ICT utilization, the majority of the respondents reported using ICT 3–5 times, with 242 (89.96%), followed by 1–2 times with 18 (6.69%), while 9 (3.35%) reported using ICT rarely. This indicates that ICT has become a regular part of the respondents' daily learning experiences. The findings support the report of UNESCO (2023), which emphasized that learners' access to digital devices and reliable internet connectivity significantly enhances participation in technology-supported learning and promotes the development of digital competencies essential for 21st-century education.

Level of ICT Utilization of Grade Three Pupils

Table 2 shows the level of ICT Utilization of Grade Three Pupils in Terms of Good Use of ICT, ICT Helps Me Learn, I Use ICT Wisely, and My Feelings About ICT

Table 2. Level of ICT Utilization of Grade Three Pupils

Statements	Mean	Standard Deviation	Interpretation
Good Use of ICT	4.04	.43	High
I use ICT to study	3.98	1.06	High
I ask permission before I use a cellphone, tablet, or computer.	4.06	1.01	High
I follow my teacher's directions when I use ICT.	3.97	1.05	High
I use learning websites or learning apps.	4.01	1.01	High

I do not open bad or unsafe websites.	4.19	.87	High
ICT Helps Me Learn	4.03	.45	High
ICT helps me understand my lessons.	4.00	1.01	High
I like doing schoolwork with ICT.	4.12	1.04	High
I use ICT to look for information for school.	4.02	.99	High
ICT helps me finish my schoolwork faster.	4.07	.97	High
I join class activities when ICT is used.	3.94	1.10	High
I Use ICT Wisely	4.02	.47	High
I stop using gadgets when it is time to study.	3.97	1.13	High
I finish my homework before I play games.	4.13	.95	High
I do not spend too much time watching videos or playing games.	4.00	1.07	High
I use ICT for schoolwork during study time.	3.99	1.05	High
I know how to use my time well.	4.03	1.01	High
My Feelings About ICT	4.01	.46	High
I like learning with a computer or tablet.	3.99	1.12	High
ICT makes learning fun.	3.92	1.09	High
I can use ICT for my school work.	4.10	1.03	High
ICT makes me want to learn more.	3.97	1.00	High
ICT helps me do better in school.	4.07	.99	High
Behavior in ICT Utilization	4.02	.23	High

Legend: (4.21-5.0)-Very High; (3.41 – 4.20)-High; (2.61-3.40) Moderate (1.81 – 2.60)-Low; (1.00 – 1.80)-Very Low

Table 2 presents the level of ICT utilization among the Grade Three pupils as reflected by the computed weighted mean and standard deviation for each indicator. The results reveal that the overall weighted mean is 4.02 with a standard deviation of 0.23, which is interpreted as High. This indicates that the respondents frequently utilize information and communication technology (ICT) and demonstrate positive technology-related behaviors in both their academic and personal activities.

Among the indicators, "I do not open bad or unsafe websites" obtained the highest weighted mean of 4.19 (SD = 0.87), interpreted as High. This finding suggests that the respondents are generally aware of responsible online behavior and practice safe internet use. Likewise, the statements "I finish my homework before I play games" (M = 4.13, SD = 0.95), "I like doing schoolwork with ICT" (M = 4.12, SD = 1.04), and "I can use ICT for my schoolwork" (M = 4.10, SD = 1.03) also received high ratings. These findings indicate that pupils recognize ICT

as a valuable learning tool and are able to integrate technology into their school-related tasks while maintaining responsible study habits.

Conversely, the statement "I stop using gadgets when it is time to study" obtained the lowest weighted mean of 3.97 (SD = 1.13), although it still falls within the High descriptive level. This suggests that pupils generally demonstrate appropriate management of ICT during study time. The overall results across the four dimensions likewise indicate positive and responsible ICT utilization.

The present finding is consistent with Courtney, Karakus, and Ersozlu (2022), who emphasized that positive attitudes toward ICT and purposeful technology use are associated with stronger academic outcomes. The present respondents likewise demonstrated a High level of ICT utilization, suggesting that guided and responsible technology use may support productive learning experiences.

Overall, the findings suggest that Grade Three pupils possess a high level of ICT utilization, indicating that digital technologies have become an integral part of their educational experiences. Their frequent use of ICT, coupled with responsible online practices, reflects the growing integration of technology into elementary education and its potential to support meaningful learning.

The present findings were supported by the study of Andres (2025), who found that elementary pupils demonstrated a satisfactory level of ICT skills in areas such as computer operation, internet navigation, digital communication, and responsible technology use. The study further revealed that learners with stronger ICT competencies tend to be more engaged in classroom activities and exhibit better academic performance, emphasizing the importance of fostering digital literacy among elementary learners.

Table 3. Level of Academic Performance of Grade Three Pupils

Level of Academic Performance	N	Mean	Std. Deviation	Interpretation
Outstanding	188	91.43	1.68	Outstanding
Very Satisfactory	76	87.66	1.15	Very Satisfactory
Satisfactory	5	84.00	0.00	Satisfactory
Total	269	90.23	2.44	Outstanding

Table 3 presents the academic performance of the Grade Three pupils based on the approved first-term academic records. The respondents obtained an overall mean of 90.23 with a standard deviation of 2.44, interpreted as Outstanding under the academic-performance descriptors used in the study. Of the 269 respondents, 188 were classified as Outstanding, 76 as Very Satisfactory, and 5 as Satisfactory. These results indicate that most respondents demonstrated strong academic performance during the period covered by the study.

The frequency distribution further shows that 188 pupils were classified as Outstanding, 76 as Very Satisfactory, and 5 as Satisfactory. No respondents fell below the Satisfactory category. The findings indicate that the respondents generally attained the expected learning outcomes for the period covered by the study.

The observed academic performance was associated with several factors, including classroom participation, teaching strategies, study habits, parental support, and access to learning resources. However, because the study is correlational, these factors are considered possible contextual explanations rather than causal conclusions.

The findings of the present study were supported by Andres (2025), who reported that elementary pupils with stronger ICT competencies tend to demonstrate higher academic achievement because technology enables them to access learning materials efficiently, complete academic tasks effectively, and actively participate in classroom activities. The study emphasized that ICT integration enhances learners' motivation, engagement, and overall academic success. Similarly, Zhao and Watterston (2021) emphasized that meaningful integration of

digital technologies into education creates learner-centered environments that foster collaboration, critical thinking, and improved academic performance. Their study highlighted that when technology is appropriately utilized, learners become more engaged in the learning process, leading to better educational outcomes and increased academic achievement.

The present finding was also consistent with Wang, Ni, Zhang, and colleagues (2024), who reported that the educational use of digital devices can support academic performance when technology is used purposefully. The high academic performance observed in the present study is therefore compatible with the view that responsible technology use can form part of a supportive learning environment.

This implies that the consistently high academic performance of the respondents should be sustained through the continued integration of ICT-enhanced instructional strategies, active parental involvement, and the provision of adequate learning resources. Teachers were encouraged to design engaging technology-based learning activities that further strengthen learners' academic competencies, while schools should continue supporting programs that promote digital literacy and effective technology integration. Maintaining these educational practices help ensure that pupils continue to achieve positive learning outcomes and are well-prepared for the demands of 21st-century education.

Relationship Between Behavior in ICT Utilization and Academic Performance

Table 4. Relationship Between Behavior in ICT Utilization and Academic Performance

Variable	Test Statistics	P-value	Decision for Ho	Interpretation
Behavior in ICT Utilization vs Academic Performance	0.00037	0.995	Failed to Reject Ho	Not Significant

Table 4 presents the relationship between behavior in ICT utilization and academic performance. The Spearman correlation coefficient was 0.00037 with a p-value of 0.995, which was greater than the 0.05 level of significance. Therefore, the null hypothesis was not rejected, indicating that there was no statistically significant relationship between behavior in ICT utilization and academic performance among the respondents.

The finding indicated that the High level of behavior in ICT utilization observed among the respondents was not statistically associated with their academic performance in this study. This suggests that academic performance may also depend on other factors such as instructional quality, learner motivation, study habits, parental support, and the learning environment.

The result was consistent with Wang, Ni, Zhang, and colleagues (2024), who emphasized that the educational value of technology depends on how it is used and integrated into learning rather than on technology exposure alone. Li and Zhu (2023) likewise highlighted the importance of the quality and purpose of digital engagement. The difference between these findings and studies reporting positive associations may be related to differences in grade level, learning context, technology integration, and other factors affecting academic achievement.

Relationship Between Behavior in ICT Utilization and Age

Table 5a. Relationship Between Behavior in ICT Utilization and Age

Variable	Test Statistics	P-value	Decision for Ho	Interpretation
Behavior in ICT Utilization vs Age	-0.072	0.242	Failed to Reject Ho	Not Significant

Table 5a presents the relationship between behavior in ICT utilization and age. The Pearson correlation coefficient was -0.072 with a p-value of 0.242, which was greater than 0.05. Therefore, the null hypothesis was not rejected, indicating no statistically significant relationship between age and behavior in ICT utilization.

The finding suggests that the respondents' ICT utilization was relatively similar across the 8-, 9-, and 10-year-old groups. The narrow age range and comparable grade-level learning experiences may have contributed to the similarity.

Udto and Kusain (2023) and Esmaquilan, Edaño, and Vasquez (2023) emphasized the importance of developmental readiness and guided ICT experiences among elementary learners. The present finding suggests that within the limited age range of the Grade Three respondents, age alone was not significantly associated with ICT utilization.

Relationship Between Behavior in ICT Utilization and Sex

Table 5b. Relationship Between Behavior in ICT Utilization and Sex

Variable	Test Statistics	P-value	Decision for Ho	Interpretation
Behavior in ICT Utilization vs Sex	8.034	0.018	Reject Ho	Significant

Table 5b presents the relationship between behavior in ICT utilization and sex. The Pearson chi-square statistic was 8.034 with a p-value of 0.018, which was lower than 0.05. Therefore, the null hypothesis was rejected, indicating a statistically significant relationship between sex and behavior in ICT utilization.

The significant result indicated that the reported ICT utilization patterns differed between male and female respondents. This finding should not be interpreted as one sex being inherently more capable; rather, it may reflect differences in interests, experiences, learning preferences, or patterns of technology use.

Scherer and Siddiq (2021) emphasized that learner characteristics and experiences can be associated with differences in digital competence and ICT utilization. OECD (2021) and UNESCO (2023) likewise emphasize the importance of equitable opportunities and supportive learning environments for all learners.

Relationship Between Behavior in ICT Utilization and Access to ICT at Home

Table 5c. Relationship Between Behavior in ICT Utilization and Access to ICT at Home

Variable	Test Statistics	P-value	Decision for Ho	Interpretation
Behavior in ICT Utilization vs Access to ICT at Home	Not computed	—	Not tested	Constant variable

Table 5c presents the relationship between behavior in ICT utilization and access to ICT at home. All 269 respondents reported access to a cellphone, tablet, or computer at home. Because the variable was constant, no inferential statistic could be computed. Therefore, no decision regarding a significant relationship was made for this profile variable.

Because all respondents reported access to at least one ICT device at home, there was no variation in this profile variable with which to test its relationship with behavior in ICT utilization. Ben Youssef, Dahmani, and Ragni (2022) and UNESCO (2023) emphasize that access becomes educationally valuable when learners receive appropriate guidance and meaningful opportunities to use technology. The present finding supports the view that availability alone is not sufficient to determine how pupils utilize ICT.

Relationship Between Behavior in ICT Utilization and Internet Access

Table 5d. Relationship Between Behavior in ICT Utilization and Internet Access

Variable	Test Statistics	P-value	Decision for Ho	Interpretation
Behavior in ICT Utilization vs Internet Access	4.493	0.106	Failed to Reject Ho	Not Significant

Table 5d presents the relationship between behavior in ICT utilization and internet access. The reported chi-square statistic was 4.493 with a p-value of 0.106, which was greater than 0.05. Therefore, the null hypothesis was not rejected, indicating no statistically significant relationship between internet access and behavior in ICT utilization.

The finding explained that 97.77% of the respondents reported having internet access at home, leaving little variation between groups. Comparable school-based learning experiences and teacher guidance may also have reduced the influence of internet access on ICT utilization. UNESCO (2023) and OECD (2021) emphasize that connectivity alone does not guarantee meaningful learning outcomes; the quality of digital resources, instructional support, and purposeful use of technology also matter. The present finding is consistent with this perspective.

Relationship Between Behavior in ICT Utilization and Frequency of ICT Use

Table 5e. Relationship Between Behavior in ICT Utilization and Frequency of ICT Use

Variable	Test Statistics	P-value	Decision for Ho	Interpretation
Behavior in ICT Utilization vs Frequency of ICT Use	3.316	0.506	Failed to Reject Ho	Not Significant

Table 5e presents the relationship between behavior in ICT utilization and frequency of ICT use. The reported chi-square statistic was 3.316 with a p-value of 0.506, which was greater than 0.05. Therefore, the null hypothesis was not rejected, indicating no statistically significant relationship between frequency of ICT use and behavior in ICT utilization.

The finding suggested that the frequency of ICT use alone did not determine how pupils utilized technology. The purpose, quality, and context of technology use may be more important than the number of times pupils reported using ICT. OECD (2021) and UNESCO (2023) emphasize purposeful technology use and meaningful learning experiences rather than frequency alone. Wang, Ni, Zhang, and colleagues (2024) similarly reported that educational use is more beneficial than excessive or non-academic use.

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presented the summary of findings, conclusions, and recommendations of this research.

Summary of Findings

The following findings were drawn from the gathered, presented, and analyzed data:

1. The profile of the 269 Grade Three pupils showed that 245 (91.08%) were 8 years old, 135 (50.19%) were female, all 269 (100.00%) had access to a cellphone, tablet, or computer at home, 220 (81.78%) most frequently used a cellphone, 263 (97.77%) had internet access at home, and 242 (89.96%) reported using ICT 3–5 times a week.

2. The level of ICT utilization of the Grade Three pupils was High, with an overall weighted mean of 4.02 (SD = 0.23). The four dimensions—Good Use of ICT (M = 4.04), ICT Helps Me Learn (M = 4.03), I Use ICT Wisely (M = 4.02), and My Feelings About ICT (M = 4.01) were all interpreted as High.
3. The level of academic performance of the Grade Three pupils was Outstanding, with an overall mean of 90.23 (SD = 2.44). Of the respondents, 188 were classified as Outstanding, 76 as Very Satisfactory, and 5 as Satisfactory.
4. Statistical analysis revealed no significant relationship between behavior in ICT utilization and academic performance. The Spearman correlation coefficient was 0.00037 with a p-value of 0.995, which was greater than the 0.05 level of significance; therefore, the first null hypothesis was not rejected.
5. The analysis of the respondents' profile and behavior in ICT utilization showed that age ($p = 0.242$), internet access ($p = 0.106$), and frequency of ICT use ($p = 0.506$) were not significantly related to behavior in ICT utilization, while sex showed a significant relationship ($p = 0.018$). Access to ICT at home was not subjected to an inferential test because all 269 respondents reported access to a cellphone, tablet, or computer at home.
6. Based on the findings, an ICT Utilization Enhancement Program was proposed to strengthen responsible, purposeful, safe, and educational use of technology among Grade Three pupils.

Conclusions

This portion presents the conclusions drawn from the findings of the study based on the research objectives.

1. The respondents' profile provides an important description of the learners. Among the profile variables for which inferential tests were available, sex was significantly related to behavior in ICT utilization, while age, internet access, and frequency of ICT use were not significantly related. Access to ICT at home was a constant variable and therefore no inferential relationship could be tested.
2. The Grade Three pupils demonstrated a High level of ICT utilization, indicating that they generally reported responsible, purposeful, and positive use of ICT across the four measured dimensions.
3. The respondents demonstrated Outstanding overall academic performance, with a mean of 90.23, indicating that they generally attained strong academic results during the period covered by the study.
4. There is no significant relationship between behavior in ICT utilization and academic performance. This indicates that the observed level of ICT utilization was not statistically associated with academic performance in this study and that other instructional, learner, family, and environmental factors may also be relevant.
5. Sex was significantly related to behavior in ICT utilization, whereas age, internet access, and frequency of ICT use were not significantly related. Access to ICT at home was constant across all respondents, so no inferential test was computed for that variable.
6. The findings support the development and implementation of an ICT Utilization Enhancement Program to sustain positive ICT practices and strengthen responsible digital citizenship.

Recommendations

The following recommendations are based on the findings and conclusions of the study:

1. Schools may continue strengthening ICT integration by providing adequate technological resources, improving ICT facilities, and ensuring that learners have equitable opportunities to access technology for educational purposes.
2. Teachers may continue integrating ICT into classroom instruction through meaningful, learner-centered, and interactive activities that promote responsible ICT utilization, digital literacy, creativity, collaboration, and critical thinking.

3. Parents may continue supervising and guiding their children's use of digital technologies by encouraging educational applications, monitoring screen time, and reinforcing responsible ICT utilization at home.
4. Schools should strengthen other factors that support academic achievement, such as effective teaching strategies, learner motivation, study habits, parental involvement, and continuous academic support, because ICT utilization was not significantly related to academic performance in this study.
5. Teachers may design inclusive ICT activities that provide equal opportunities for male and female learners while responding to diverse learning needs and technology-use experiences. The significant finding should not be interpreted as one sex being inherently more capable than the other.
6. The proposed ICT Utilization Enhancement Program should be implemented and evaluated, subject to school approval, to strengthen digital literacy, responsible ICT utilization, cyber-safety awareness, and ethical use of technology. Future researchers may validate the program in other schools or grade levels.

Proposed Program

Program Title	Project : SMART ICT Supporting Meaningful and Responsible Technology Integration for Grade Three Pupils
Rationale	The increasing integration of Information and Communication Technology (ICT) in elementary education provides learners with greater opportunities to develop digital literacy, enhance learning, and improve academic performance. However, effective ICT integration requires pupils to use technology responsibly, purposefully, and ethically. The findings of this study revealed the level of Grade Three pupils' ICT utilization and academic performance, providing valuable information for developing school-based interventions that strengthen responsible ICT practices and maximize technology as a learning tool. Project SMART ICT is designed to reinforce pupils' positive ICT practices through collaborative efforts among teachers, parents, and school administrators. The program emphasizes digital citizenship, responsible gadget use, educational technology integration, and parental involvement to cultivate productive ICT habits that support learners' holistic development.
Objective:	To enhance the responsible utilization of Information and Communication Technology (ICT) among Grade Three pupils and strengthen its effective use in improving learning engagement and academic performance.

Target Beneficiaries
☐ Grade Three Pupils ☐ Grade Three Teachers ☐ Parents/Guardians ☐ School Administrators

Expected Outcomes
At the end of the implementation, the school is expected to achieve the following outcomes: Grade Three pupils demonstrate responsible and ethical ICT utilization.

Learners use ICT primarily for educational purposes.

Teachers effectively integrate ICT into classroom instruction.

Parents actively supervise their children's technology use at home.

Improved digital citizenship and online safety awareness among pupils.

Increased learner engagement during ICT-assisted lessons.

Sustained or improved academic performance.

Establishment of a school culture that promotes responsible technology use.

REFERENCES

A. Books

1. Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.
2. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*.
3. Piaget, J. (1972). *The psychology of the child*. Basic Books.
4. Santrock, J. W. (2021). *Educational psychology* (7th ed.). McGraw-Hill Education.

B. Journals / Researches / Publications / Magazine

1. Alvarez, R., & Caballes, M. (2022). Digital literacy among elementary learners in the Philippines. *Philippine Social Science Journal*, 5(2), 56–68.
2. Andres, M. (2025). ICT competencies and academic performance among elementary pupils. *Philippine Journal of Educational Research*, 18(1), 45–62.
3. Atasoy, R., Çoban, S., & Yatağan, M. (2022). The relationship between ICT use and science achievement. *Education and Information Technologies*, 27(5), 6709–6732.
4. Ben Youssef, A., Dahmani, M., & Ragni, L. (2022). ICT use, digital divide, and academic achievement. *Education and Information Technologies*, 27(8), 11023–11045.
5. Chen, Y., Lin, H., & Chen, P. (2024). Self-regulation, digital learning habits, and students' academic performance. *Computers & Education*, 205, 104904.
6. Courtney, M., Karakus, M., & Ersozlu, Z. (2022). ICT attitudes and academic achievement in mathematics and science. *Education and Information Technologies*, 27(6), 8055–8074.
7. Esmaquilan, R., Edaño, D., & Vasquez, M. (2023). Developmental readiness and ICT utilization among elementary learners. *Philippine Journal of Education*, 102(2), 88–103.
8. Gorjón, D., & Osés, A. (2023). ICT overuse and mathematics achievement. *Education Sciences*, 13(4), 375.
9. Guibone, R., & Bercero, A. (2021). ICT exposure and academic performance of Grade 4 learners. *Philippine Journal of Educational Management*, 14(2), 75–90.
10. Hu, X., Gong, Y., Lai, C., & Leung, F. (2022). ICT engagement and academic achievement: A global meta-analysis. *Computers & Education*, 179, 104410.
11. Li, X., & Zhu, Y. (2023). Digital engagement as a mediator of ICT utilization and academic achievement. *Education and Information Technologies*, 28(3), 3011–3030.
12. Scherer, R., & Siddiq, F. (2021). Age differences in digital competence and ICT utilization. *Computers & Education*, 168, 104211.
13. Udto, J., & Kusain, R. (2023). ICT utilization among elementary learners in the Philippines. *Philippine Educational Research Journal*, 16(1), 23–39.
14. Wang, X., Ni, L., Zhang, Y., et al. (2024). Educational use of digital devices and academic performance: A meta-analysis. *Computers & Education*, 207, 104936.

15. Zhao, Y., & Watterston, J. (2021). The changes we need: Education post COVID-19. *Journal of Educational Change*, 22(1), 3–12.

C. Unpublished Thesis None.

D. General References / Online Sources

1. Department of Education. (2024). MATATAG Curriculum and digital learning initiatives. <https://www.deped.gov.ph>
2. International Telecommunication Union. (2023). *Measuring digital development: Facts and figures 2023*. <https://www.itu.int>
3. Organisation for Economic Co-operation and Development. (2021). *21st-century readers: Developing literacy skills in a digital world*. <https://www.oecd.org>
4. Organisation for Economic Co-operation and Development. (2023). *PISA 2022 Results*. <https://www.oecd.org>
5. Polit, D. F., & Beck, C. T. (2021). *Guidelines for content validity index*. <https://journals.lww.com>
6. UNESCO. (2023). *Global education monitoring report 2023: Technology in education*. <https://www.unesco.org>
7. UNICEF Philippines. (2021). *Children's digital learning in the Philippines*. <https://www.unicef.org/philippines>
8. World Health Organization. (2022). *Gender and health*. <https://www.who.int>

APPENDICES

Appendix A.1

Certification of Plagiarism and Grammarly Test

Appendix A.2

Certification of Statistical Data Analysis

Appendix B.1

Letter to the Public School's Division Superintendent

Appendix B.2

Letter for the Conduct of the Study Addressed to the School Principal

Appendix B.3

Letter for the Validators of Survey Questionnaire

Appendix C

Research Instrument

Dear Respondent:

You are invited to participate in this study. Your responses will be kept confidential and used only for research purposes. Participation is voluntary. Thank you.

Name: _____ (optional)

Instruction: Put a Check only per item.

Part I. Respondent Profile

Age: ☐ 8 ☐ 9 ☐ 10

Sex: ☐ Boy ☐ Girl

Do you have a cellphone, tablet, or computer at home? ☐ Yes ☐ No

What do you use most? ☐ Cellphone ☐ Tablet ☐ Laptop ☐ Computer

Do you have internet at home? ☐ Yes ☐ No

How often do you use ICT? ☐ Every day ☐ 3–5 times a week ☐ 1–2 times a week ☐ Rarely

Part II. ICT Utilization

Scale: 5=Always, 4=Often, 3=Sometimes, 2=Rarely, 1=Never

A. (Good Use of ICT)

No.	Statement	5	4	3	2	1
1	I use ICT to study.					
2	I ask permission before I use a cellphone, tablet, or computer.					
3	I follow my teacher's directions when I use ICT.					
4	I use learning websites or learning apps.					
5	I do not open bad or unsafe websites.					

B. (ICT Helps Me Learn)

No.	Statement	5	4	3	2	1
6	ICT helps me understand my lessons.					
7	I like doing school work with ICT.					
8	I use ICT to look for information for school.					
9	ICT helps me finish my school work faster.					
10	I join class activities when ICT is used.					

C. (I Use ICT Wisely)

No.	Statement	5	4	3	2	1
11	I stop using gadgets when it is time to study.					
12	I finish my homework before I play games.					

13	I do not spend too much time watching videos or playing games.					
14	I use ICT for school work during study time.					
15	I know how to use my time well.					

D. (My Feelings About ICT)

No.	Statement	5	4	3	2	1
16	I like learning with a computer or tablet.					
17	ICT makes learning fun.					
18	I can use ICT for my school work.					
19	ICT makes me want to learn more.					
20	ICT helps me do better in school.					

Appendix D.1

Validity of Test Result

Content Validity Index (CVI) of the Research Instrument

Validity Measure	Obtained Value	Interpretation
Item-Level Content Validity Index (I-CVI)	0.96	Excellent Content Validity
Scale-Level Content Validity Index (S-CVI)	0.98	Excellent Content Validity

Interpretation

The researcher-made questionnaire was evaluated by five (5) experts in educational research, ICT, and elementary education. The computed Item-Level Content Validity Index (I-CVI) of 0.96 and Scale-Level Content Validity Index (S-CVI) of 0.98 indicate that the research instrument possesses excellent content validity. These results demonstrate that the questionnaire items are relevant, clear, and appropriate for measuring the behavior of Grade Three pupils in ICT utilization.

Appendix D.2

Reliability of Test Result

Cronbach's Alpha Reliability Coefficients

Dimension	No. of Items	Cronbach's Alpha	Interpretation
Good Use of ICT	5	0.89	Good
ICT Helps Me Learn	5	0.90	Excellent
I Use ICT Wisely	5	0.92	Excellent

My Feelings About ICT	5	0.91	Excellent
Overall Instrument	20	0.91	Excellent Reliability

Interpretation

The questionnaire was pilot-tested among 30 Grade Three pupils who were not included in the actual respondents. The computed overall Cronbach's Alpha coefficient of 0.91 indicates excellent internal consistency, demonstrating that the instrument is highly reliable for measuring pupils' behavior in ICT utilization. All four dimensions obtained Cronbach's Alpha values greater than 0.80, confirming that each domain possesses satisfactory to excellent reliability.

Appendix D.3

Reliability and Validity of Test Result

Summary of the Validity and Reliability Results

Test	Result	Interpretation
Item-Level Content Validity Index (I-CVI)	0.96	Excellent Content Validity
Scale-Level Content Validity Index (S-CVI)	0.98	Excellent Content Validity
Overall Cronbach's Alpha	0.91	Excellent Reliability

Conclusion

The results of the validity and reliability testing indicated that the researcher-made questionnaire was a valid and reliable instrument for determining the behavior of Grade Three pupils in ICT utilization in relation to their academic performance. The excellent content validity indices confirm that the instrument adequately measures the intended constructs, while the overall Cronbach's Alpha coefficient of 0.91 demonstrates excellent internal consistency. Consequently, the instrument was considered appropriate for the actual administration of the study.

Appendix E

Mean of the Research Instrument

Dimension	Mean	Standard Deviation	Interpretation
Good Use of ICT	4.04	0.43	High
ICT Helps Me Learn	4.03	0.45	High
I Use ICT Wisely	4.02	0.47	High
My Feelings About ICT	4.01	0.46	High
Overall Behavior in ICT Utilization	4.02	0.23	High

Legend

Mean Range	Interpretation
4.21–5.00	Very High
3.41–4.20	High
2.61–3.40	Moderate
1.81–2.60	Low
1.00–1.80	Very Low

Interpretation

The results indicated that the overall weighted mean of the research instrument was 4.02 with a standard deviation of 0.23, which is interpreted as High. This suggests that the Grade Three pupils generally demonstrated a high level of behavior in ICT utilization. Among the four dimensions, Good Use of ICT obtained the highest mean ($M = 4.04$, $SD = 0.43$), followed by ICT Helps Me Learn ($M = 4.03$, $SD = 0.45$), I Use ICT Wisely ($M = 4.02$, $SD = 0.47$), and My Feelings About ICT ($M = 4.01$, $SD = 0.46$). The findings indicated that the respondents consistently manifested positive, responsible, and educational use of ICT across all dimensions of the instrument.

Appendix F.1

Raw Data

The Behavior of Grade Three Pupils in ICT Utilization in Relation to Their Performance								A.(Good Use of ICT)					B.(ICT Helps Me Learn)					C.(I Use ICT Wisely)					D.(My Feelings About ICT)					Average				
GRADE III	ETCS-II																															
Sections	RESPONDENTS	sex	Age	Is a cellphone, tablet, or computer do you use more often do you use	have internet	after do you use		1	2	3	4	5	MEAN	1	2	3	4	5	MEAN	1	2	3	4	5	MEAN	1	2	3	4	5	MEAN	
COURAGE	1	1	1	1	4	1	2	5	4	3	4	5	4	3	4	5	4	5	5	4	3	5	5	3	3	4	4	5	5	4	4	90
	2	1	2	1	2	1	1	5	4	2	5	4	3	5	3	5	5	5	5	5	5	5	4	5	3	4	4	5	5	3	5	90
	3	1	1	1	1	1	3	4	4	5	1	5	3	3	3	4	3	4	3	4	4	5	5	5	5	5	5	5	5	5	3	90
	4	1	3	1	3	1	2	4	5	4	4	3	5	4	5	5	4	1	4	4	4	3	4	4	4	3	5	4	4	3	5	90
	5	1	3	1	3	1	2	4	5	4	4	3	5	4	5	5	4	1	4	4	4	3	4	4	4	3	5	4	4	3	5	90
	6	1	2	1	2	1	1	5	5	4	5	5	4	5	4	3	4	5	5	3	5	4	2	4	4	3	4	5	5	5	2	90
	7	1	1	1	1	1	3	5	4	4	5	4	5	4	4	4	4	4	5	5	3	4	3	5	5	4	4	4	4	4	4	90
	8	1	3	1	3	1	2	4	5	3	1	3	5	3	5	5	4	3	4	3	5	5	4	2	4	5	5	5	4	5	4	89
	9	1	2	1	2	1	2	4	4	4	2	5	4	2	4	2	5	4	3	3	4	5	4	3	4	4	3	5	4	5	1	87
	10	1	2	1	2	1	1	5	4	4	5	5	5	3	5	5	5	4	5	4	4	3	5	4	4	2	4	4	5	4	5	88
	11	1	1	1	1	1	1	4	5	3	5	5	5	5	4	5	5	4	5	2	5	4	4	4	4	5	4	5	5	5	5	89
	12	1	1	1	1	1	1	3	5	5	5	4	4	4	5	3	4	4	4	4	4	5	3	4	5	3	4	2	5	5	5	87
	13	1	1	1	1	1	1	1	4	4	4	3	4	4	4	5	4	5	4	3	5	2	5	5	4	5	4	5	5	5	4	85
	14	1	1	1	1	1	2	4	4	5	4	5	4	4	4	4	4	3	5	5	5	4	5	5	4	3	5	3	4	3	4	86
	15	1	2	1	2	1	2	3	4	3	5	3	4	4	5	3	5	5	3	4	5	5	4	3	4	4	4	5	4	1	4	84
	16	1	2	1	2	1	2	4	2	3	5	3	2	1	2	4	5	4	4	5	4	5	5	2	4	5	5	5	5	5	5	86
	17	1	2	1	2	1	1	5	4	3	3	4	3	4	4	4	3	4	5	5	5	5	2	5	3	5	3	4	4	3	2	88
	18	1	1	1	1	1	1	5	2	3	4	4	5	3	5	5	2	4	4	3	4	5	4	4	4	5	2	5	3	5	5	89
	19	2	1	1	1	2	1	4	5	1	4	5	3	2	5	4	5	4	3	4	5	3	3	5	4	5	1	5	5	4	3	87
	20	2	1	1	1	2	1	4	5	4	3	4	2	5	5	5	4	3	5	5	5	3	5	5	4	4	5	4	1	3	85	
	21	2	1	1	1	2	1	3	4	3	4	2	1	3	4	5	5	4	5	5	4	4	5	5	5	4	4	4	5	4	4	86
	22	2	1	1	1	1	1	5	5	4	2	5	4	4	5	4	4	3	4	3	4	1	5	2	5	5	5	5	4	3	4	84
	23	2	1	1	1	1	1	3	5	4	3	5	4	4	5	3	4	5	3	4	5	5	3	2	5	5	5	5	4	2	5	86
	24	2	1	1	1	1	1	2	5	2	4	5	4	5	4	4	4	3	4	5	5	5	5	4	4	5	4	5	3	4	5	88
	25	2	1	1	1	1	1	5	5	5	5	3	4	5	3	4	3	5	3	5	5	5	3	4	4	2	4	3	4	4	5	89
	26	2	1	1	1	1	1	2	4	3	4	4	5	4	4	2	4	5	4	4	2	3	5	1	4	5	3	5	4	5	4	87
	27	2	1	1	1	1	1	5	4	3	4	5	4	1	4	5	4	4	3	5	2	4	4	2	5	5	4	5	3	5	4	85
	28	2	1	1	1	1	1	4	4	3	5	5	4	5	3	5	4	5	5	5	3	3	5	4	5	4	3	2	3	3	4	86
	29	2	1	1	1	1	1	2	5	4	5	5	3	5	5	5	4	4	3	5	5	5	4	5	4	5	5	5	5	5	3	84
	30	2	1	1	1	1	1	3	5	2	5	5	5	3	5	5	3	3	5	3	4	3	4	4	4	3	3	4	5	4	4	86
	31	2	1	1	1	1	1	2	4	5	4	4	4	3	5	4	3	5	2	4	5	4	4	5	5	5	4	3	4	5	3	88
	32	2	1	1	1	1	1	5	4	4	1	4	5	3	3	1	2	4	4	5	4	5	4	4	4	4	5	3	5	2	2	90
	33	2	1	1	1	1	1	4	3	5	5	4	5	5	5	3	5	5	4	3	4	5	4	4	3	4	5	4	3	4	5	90
	34	2	1	1	1	1	2	4	5	4	3	5	5	3	2	5	4	4	5	5	3	5	5	4	4	4	4	5	5	4	4	90
TOTAL	34	34		34																											87.62	
Diligence	1	1	1	1	1	1	1	5	4	2	4	4	5	4	4	4	4	4	4	5	2	5	4	3	3	4	5	5	2	5	4	86
	2	1	1	1	1	1	1	5	4	3	4	5	4	5	4	5	4	1	2	4	5	3	5	4	5	4	5	2	3	4	5	84

Appendix F.2

Computation of the Frequency Table According to Profile

SOP 1

Table 1: Age

Category	Frequency	Percent	Valid Percent	Cumulative Percent
8 years old	245	91.08	91.08	91.08
9 years old	15	5.58	5.58	96.65
10 years old	9	3.35	3.35	100.00
Total	269	100.00	100.00	

Table 2: Sex

Category	Frequency	Percent	Valid Percent	Cumulative Percent
Male	134	49.81	49.81	49.81
Female	135	50.19	50.19	100.00
Total	269	100.00	100.00	

Table 3: Do you have a cellphone, tablet, or computer at home?

Category	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	269	100.00	100.00	100.00

Table 4: What do you use most?

Category	Frequency	Percent	Valid Percent	Cumulative Percent
Cellphone	220	81.78	81.78	81.78
Tablet	30	11.15	11.15	92.94
Laptop	13	4.83	4.83	97.77
Computer	6	2.23	2.23	100.00
Total	269	100.00	100.00	

Table 5: Do you have internet at home?

Category	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	263	97.77	97.77	97.77

No	6	2.23	2.23	100.00
Total	269	100.00	100.00	

Table 6: How often do you use ICT?

Category	Frequency	Percent	Valid Percent	Cumulative Percent
3–5 Times	242	89.96	89.96	89.96
1–2 Times	18	6.69	6.69	96.65
Rarely	9	3.35	3.35	100.00
Total	269	100.00	100.00	

Appendix F.3

Computation of the Level of ICT Utilization

SOP 2

Dimension	N	Mean	Std. Deviation
Good Use of ICT	269	4.04	.43
Q1	269	3.98	1.06
Q2	269	4.06	1.01
Q3	269	3.97	1.05
Q4	269	4.01	1.01
Q5	269	4.19	.87
ICT Helps Me Learn	269	4.03	.45
Q1	269	4.00	1.01
Q2	269	4.12	1.04
Q3	269	4.02	.99
Q4	269	4.07	.97
Q5	269	3.94	1.10
I Use ICT Wisely	269	4.02	.47
Q1	269	3.97	1.13
Q2	269	4.13	.95
Q3	269	4.00	1.07

Q4	269	3.99	1.05
Q5	269	4.03	1.01
My Feelings About ICT	269	4.01	.46
Q1	269	3.99	1.12
Q2	269	3.92	1.09
Q3	269	4.10	1.03
Q4	269	3.97	1.00
Q5	269	4.07	.99
Behavior in ICT Utilization_Overall Mean	269	4.02	.23
Valid N (listwise)	269		

Interpretation

The results show that the overall level of ICT utilization among the Grade Three pupils obtained a mean of 4.02 with a standard deviation of 0.23, indicating a High level of ICT utilization. Among the four dimensions, Good Use of ICT obtained the highest mean of 4.04 (SD = 0.43), followed by ICT Helps Me Learn with a mean of 4.03 (SD = 0.45), I Use ICT Wisely with a mean of 4.02 (SD = 0.47), and My Feelings About ICT with a mean of 4.01 (SD = 0.46).

Appendix F.4

Computation of Academic Performance and the The Level of Academic Performance of the Respondents

SOP 3

Academic Performance

	N	Mean	Std. Deviation
Academic Performance	269	90.23	2.44
Valid N (listwise)	269		

Level of Academic Performance

Academic Performance

Level of Academic Performance	N	Mean	Std. Deviation
Outstanding	188	91.43	1.68
Very Satisfactory	76	87.66	1.15
Satisfactory	5	84.00	.00
Total	269	90.23	2.44

Interpretation

The academic performance of the 269 respondents obtained an overall mean of 90.23 with a standard deviation of 2.44. Based on the presented distribution, 188 pupils were classified as Outstanding with a mean of 91.43, 76 pupils were classified as Very Satisfactory with a mean of 87.66, and 5 pupils were classified as Satisfactory with a mean of 84.00. The total mean of 90.23 reflects the overall academic performance of the respondents.

Appendix F.4.1

Computation on the Relationship between the ICT Utilization and Academic Performance using Spearman's rho

SOP 4

Relationship between Behavior in ICT Utilization and Academic Performance

			Level of Behavior in ICT Utilization	Level of Academic Performance
Spearman's rho	Level of Behavior in ICT Utilization	Correlation Coefficient	1.00000	.00037
		Sig. (2-tailed)	.	.99520
		N	269.00000	269.00000
	Level of Academic Performance	Correlation Coefficient	.00037	1.00000
		Sig. (2-tailed)	.99520	.
		N	269.00000	269.00000

Level of Behavior in ICT Utilization * Level of Academic Performance

Crosstabulation

Count

Level of Behavior in ICT Utilization		Level of Academic Performance			
		Outstanding	Very Satisfactory	Satisfactory	Total
	Very High	37	15	1	53
	High	149	60	4	213
	Moderate	2	1	0	3
Total		188	76	5	269

Symmetric Measures

	Value	Asymptotic Standard Error	Approximate T ^b	Approximate Significance
Ordinal by Ordinal Gamma	.001	.158	.006	.995
N of Valid Cases	269			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Interpretation

The Spearman rank-order correlation between the level of behavior in ICT utilization and the level of academic performance was 0.00037, with a significance value of 0.99520 based on 269 valid cases. The Gamma coefficient was 0.001 with an approximate significance of 0.995. These results indicate that the relationship between the two variables is negligible and not statistically significant at the conventional 0.05 level.

Appendix F.4.2

Supporting Inferential Results for SOP 5

The following table presents the inferential results reported in Chapter 4 for the profile variables that were subjected to statistical testing. Most frequently used ICT device was treated as a descriptive profile variable, while access to ICT at home was constant across all respondents and therefore was not tested inferentially.

Profile Variable	Test	Test Statistic	p-value	Decision / Interpretation
Age	Pearson correlation	-0.072	0.242	Failed to reject H ₀ — Not significant
Sex	Pearson chi-square	8.034	0.018	Reject H ₀ — Significant
Access to ICT at home	Not computed	—	—	Not tested — Constant variable
Internet access	Pearson chi-square	4.493	0.106	Failed to reject H ₀ — Not significant
Frequency of ICT use	Pearson chi-square	3.316	0.506	Failed to reject H ₀ — Not significant

Statistical consistency note: The supplied manuscript contained supporting crosstabulations for sex, device use, and internet access against Academic Performance rather than the ICT Utilization variable named in SOP 5. Those outputs were therefore not retained here as evidence for SOP 5. The reported statistics above are preserved from the manuscript's Chapter 4 tables; the corresponding original statistical-software output for Profile × ICT Utilization should be retained in the researcher's records and inserted if required by the panel.