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**| RESEARCH ARTICLE**

# Using Information and Communication Technology on Students' Mathematics Performance in National High Schools in the Philippines

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**| ABSTRACT**
This research investigates the prospective influence of Information and Communication Technology on students' Mathematics performance in selected National High Schools in the Philippines for the School Year 2023-2024. The study used a descriptive correlation research design. The study's respondents comprise 146 Grade 7 students, randomly selected from the total population. A two-part adapted survey questionnaire from Bam (2021) and a researcher-made Math Achievement test questionnaire were used as instruments of the study. The data were treated using simple percentages, frequency counts, weighted means, and Pearson's r correlation. There were more females (59%) than males and most (60%) were 11-12 years old. The highest educational attainment of the majority of the mothers and fathers was high school graduate comprising 33 percent and 32 percent, respectively with 58 percent of the respondents having a family monthly income of below 10,000. There was a Satisfactory mean score of 22.54 for mathematics achievement with a standard deviation of 3.49. The level of ICT integration was 3.90, interpreted as Positive. However, there was no strong correlation between ICT integration and mathematics performance. It is concluded that the respondent's perceptions of ICT integration and their mathematical achievement have no bearing on their performance in mathematics. A proposed ICT integration plan is recommended to give teachers worthwhile learning opportunities on how to further enhance their ICT integration skills.

**| KEYWORDS**

ICT integration, Mathematics performance, descriptive-correlational design, Cebu, Philippines

**| ARTICLE INFORMATION**

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## 1. Introduction

Mathematics is a fundamental discipline taught in schools and holds an immense significance in everyday existence. It transcends being merely a subject, as it serves as a valuable instrument for problem-solving, decision-making, and comprehending the intricacies of our surroundings. The study of mathematics aids in the cultivation of critical thinking, problem-solving, and logical reasoning abilities that are indispensable for achievement across diverse domains. Whether it involves financial management, crucial decision-making, or gaining insights into the world, mathematics pervades all facets of our daily experiences.

Unfortunately, the COVID-19 pandemic has exacerbated the current education crisis and widened the learning gap in mathematics among young students (Sooknanan & Seemungal, 2023). The situation has led to a decline in mathematics learning, as students may need more remediation to progress to new lessons, leading to learning gaps (Torres, 2021). Most students perceive mathematics subjects negatively (Zakaria et al., 2013). Because of the formula and rules involved in a mathematics lesson, students tend to develop negative attitudes and concerns towards the subject (Altintas & Ilgün, 2017). Many students struggle with learning

mathematics at some point. For this reason, they have to experiment with different learning styles in learning mathematics. Regrettably, not everyone enjoys mathematics, despite the different strategies made by the teachers.

Before the pandemic, the Philippines faced challenges in mathematics education and ranked lowest in international assessments (San Juan, 2019). In PISA result 2018 the mathematical literacy rate was 353, which is much lower than the OEC's average. OECD average is 489 points, indicating a below Level 1 proficiency. Additionally, the Philippines obtained a 297 on the 2019 Trends in International Mathematics (TIMSS). Results revealed that Philippine education is among the lowest in Mathematics and second to the last in Math and Science.

Various interventions can be implemented in response to the low performance in mathematics. However, it is crucial to acknowledge that multiple factors can influence the performance of students in mathematics. Mahanta (2019) asserts that the primary reason students experience academic failure is a lack of comprehension of fundamental ideas. Factors in the struggle to master arithmetic are bad teaching methods, a lack of experience, and attention deficits. Moreover, teaching strategies could be one of the possible factors that could affect students' performance.

According to Stewart and Felicetti (1992), learning is influenced by the educational conditions under which a student learns. Therefore, learning style is not just concerned with what students need to learn but rather how they want to learn most effectively. Teachers face a significant challenge in adapting their strategies to meet the specific needs of learners, particularly when transitioning from modular distance learning to in-person classes, particularly for grade 7 students. One widely used and effective approach to delivering lessons is integrating information and communication technology (ICT), which enhances student engagement and makes the lessons more captivating and compelling. Though it results in positive feedback, further assessment is required to determine the extent of its impact on enhancing students' learning.

In the Philippines, national high school students' mathematics performance needs to be addressed especially for Grade 7 learners. They have been observed to have low performance in Mathematics, especially in understanding the basic concepts as reported in their Quarterly Assessment Results. Teachers utilize ICT in teaching mathematics particularly for Grade 7 students to enhance their engagement in class to visualize the basic concepts in a much easier way. Teaching mathematics using ICT provides a multitude of benefits, including increased engagement, active learning, personalized instruction, collaboration opportunities, access to extensive resources, and connections to real-world applications. By harnessing the power of technology, educators can create dynamic and interactive learning experiences that empower students to become confident and proficient learners. The use of ICT is a promising practice in the mathematics classroom, but the success of this exercise is mainly dependent on several issues, including students' perceptions of ICT skills, teachers' and students' attitudes toward ICT.

As a way to aid the low performance in mathematics in many schools, the researchers assessed the perceptions of Grade 7 students on ICT integration and their mathematics achievement at the identified public national high schools in the Philippines, specific to Cebu City Division for School Year 2023-2024. Assessing students' perception of using Information and Communication Technology (ICT) with their mathematics performance offers valuable insights and benefits for both students and educators. One significant advantage is the ability to tailor instruction and support to meet students' needs and preferences. By understanding students' perceptions of ICT tools and their impact on mathematics learning, educators can make informed decisions about integrating technology effectively. This assessment enables them to identify the specific ICT tools and strategies that resonate most with students, optimizing their engagement and motivation in the subject that would be helpful for the students, teachers, and the school that have the same problem with regards to students' mathematics performance.

It is along these premises that this research aims to investigate the integration of Information and Communication Technology (ICT) on students' Mathematics performance in selected Philippine national high schools for the school year 2023-2024 as a basis for a proposed ICT integration enhancement plan. The variables under study are age and gender, parents' highest educational attainment, combined family monthly income, the respondents' level of perception of ICT integration in teaching mathematics, and mathematics performance.

**2. Literature Review**

The theoretical foundations of this research are the Self-Efficacy Theory by Bandura (1997) and the Technological Pedagogical Content Knowledge (TPACK) framework developed by Mishra and Koehler (2006).

According to social cognitive theory, self-efficacy influences and is affected by settings and behaviors (Bandura, 1986, 1997). Students who feel more successful in their learning should be more likely to practice self-regulation (e.g., setting goals, using effective learning strategies, checking their understanding, and assessing their goal progress) and create productive learning environments (e.g., minimizing distractions, and finding productive study partners). Behavioral outcomes (such as goal progress or achievement) and environmental factors (such as instructor feedback or peer comparisons) can impact self-efficacy.

A teacher's proficiency in three knowledge domains is necessary for successfully integrating information and communication technology (ICT) into the teaching and learning TPACK paradigm (Mishra & Koehler, 2006). This framework divides knowledge into three categories: content knowledge, pedagogical knowledge, and technological knowledge. The teacher must possess technological content knowledge (TCK), which includes understanding the connections between technology and content and how ICTs can modify subject matter. Technological pedagogical knowledge (TPK) comprises learning how to modify one's approach to teaching using technology and how using ICTs affords and constrains particular pedagogical practices (Ward & Benson, 2010). According to Angeli and Valanides (2009), technological knowledge (TK) encompasses the many types of hardware and software and understanding how to use them.

Self-efficacy is crucial in psychological, educational, and topic- specific research. With high self-efficacy, students benefit from their academic learning and performance in various ways. They exert more effort (Schunk, 1989), use understanding-oriented strategies more frequently (Pintrich & DeGroot, 1990), regulate their learning process more rigorously (Zimmerman & Martinez-Pons, 1990), and perform better in math and problem-solving tasks (Hoffman & Spatariu, 2008; Pietsch et al., 2003; Skaalvik & Skaalvik, 2008).

Ryan and Deci's (2000) self-determination theory asserts that teachers' emotional support behavior satisfies students' needs for competence and belonging. When the demands placed on the pupils are met, it creates an environment that supports the growth of self-efficacy. People's impressions of teacher support, according to Scott and Walczak (2009), may increase their sense of self-efficacy. Deci and Ryan (2004) further argue that this perspective might boost students' internal and external motivation. Kim et al. (2018) discovered a strong correlation between students' perceptions of teacher support and academic self-efficacy.

Students believe they can accomplish various learning activities. Success in school and life depends on having this understanding (McWilliams, 2014). Usher et al. (2019) found that pupils' mathematics performance in elementary and middle schools was significantly impacted by self-efficacy. The attitude of the teacher (will), technology competency (skill), availability of technological tools (technology), teaching with technology, and new technologies (pedagogy) are all factors of technology integration, according to Knezek and Christensen (2016).

By incorporating ICT into educational environments, instructional techniques that help students build their knowledge and improve their problem-solving skills may be developed. Various techniques, including simulation, manipulation, mind mapping, guided discovery, and creative expression, are used to accomplish this (Eickelmann & Vennemann, 2017). Teachers, who act as change agents and facilitators of learning in the classroom (Avidov-Ungar & Shamir-Inbal, 2017), must be prepared to accept the shift in learning and teaching techniques brought about by incorporating technology.

In the Philippines, the Computerization Program (DCP) of the Department of Education (DepEd) was launched in 2018 to provide public schools with the technology and resources needed to improve the teaching and learning process and meet the challenges of the 21st century. The program focused on two main components: the computerization project and schools' participation in the project (DepEd, 2018). The objective of the DCP is to equip public schools with suitable technologies that can optimize the teaching and learning experience while effectively addressing the demands of the 21st century.

Information, communication, and technology (ICT) integration in education refers to the use of computer-based communication that is integrated into the regular teaching process in the classroom. Teachers are seen as the primary actors in integrating ICT into everyday classroom activities to prepare pupils for the contemporary digital age. According to Arnseth and Hatlevik (2012), this is because ICT can create teaching and learning environments that are dynamic and proactive. Teachers' perceptions and the training they have received impact their technology utilization (Sánchez-Prieto et al., 2019). Teachers often see ICT as a tool with significant promise in the educational context after initial resistance (Podolsky et al. 2019, Burke et al., 2018). Several writers say it is a helpful instrument to improve learning and encourage students (Griffith, S.F. et al., 2020; Gordon, A. et al., 2020; Lazarides et al., 2019).

According to Ngeze (2017), integrating information and communication technology (ICT) in educational settings has introduced novel teaching and learning encounters for educators and students across numerous nations. The integration of Information and Communication Technology (ICT) has resulted in notable transformations in the field of education, fostering advancements and innovative practices in numerous countries. This is particularly evident in mathematics education, where the learning process has been dramatically influenced. Integrating information and communication technology (ICT) in mathematics education provides mathematics teachers with teaching methods promoting integration, motivation, independent learning, and active student participation. These methods facilitate the exploration and comprehension of mathematical concepts and topics, leading to a deeper understanding of mathematical ideas (Baya'a & Daher, 2013). Mathematics educators and teachers widely acknowledge the significance of integrating Information and Communication Technology (ICT) in mathematics teaching and learning. Several studies have indicated that integrating Information and Communication Technology (ICT) in mathematics education benefits students' academic performance and learning outcomes (Delen & Bulut, 2011; Comi et al., 2017; Eickelmann et al., 2017).

Information and Communication Technology (ICT) encompasses a range of methods and tools used to transmit, receive, manipulate, and interchange digital data (Aggarwal & Bal, 2020). Information and Communication Technology (ICT) facilitates the acquisition of necessary information and offers educational opportunities to influence future outcomes through ICT (Ishaq et al., 2020; Wei, 2021). Teachers with ICT competency can effectively harness the beneficial impacts of technology- driven instruction, leading to enhanced student learning outcomes and improved academic performance (Tomaro, 2018). ICT competency encompasses the aptitude, proficiencies, and understanding of the proficient use of digital tools in education and instructional processes (Melo et al., 2020).

According to Hossein-Mohand et al. (2021), digital competency encompasses various skills such as information retrieval and content management, document and table editing, mathematical formula derivation, digital drawing of expression and geometry graphs, and problem-solving about these tasks. Turk and Akyuz (2016) believe computer-based instructions positively influence students' motivation.

Researchers found that students' perceptions of their self-efficacy significantly influence their plans to use the software. Additionally, they found that self-efficacy and intents had weak relationships with one another. They asserted that gender, value perspectives, and self-efficacy beliefs were the most effective predictors of intent. Research conducted in Ghana among preservice and in-service mathematics teachers at Al-Farug College of Education examined the effect of teachers' computer attitudes, abilities, and access on their levels of ICT integration using the will, skill, and tool paradigm (Sulemana & Abdul-Kadir, 2022). The research found insufficient levels of ICT integration because instructors needed to gain the skills and knowledge necessary to effectively utilize ICT in teaching and learning. The survey also showed relatively high levels of positive attitudes toward computers, which was highlighted as a critical condition for teachers to be ready for new teaching strategies that are adaptable and include, among other things, effective use of ICT.

When used in ICT-based education, social media may boost student involvement in the Philippines' behavioral, emotional, and cognitive domains (Bond, 2020). The goal of social media inclusion in the courses should be clear to optimize learning for the students and ensure that they reap the rewards of technology integration via autonomous student learning (Chawinga, 2017). Since Facebook is used by the majority of students in the Philippines, the school must take into account the possibilities of employing online learning to enhance the alternative delivery method for distance education. Utilizing cutting-edge technology also supports deep learning. Through a meta-synthesis, one research found that "social media such as blogs and wikis for idea generation, problem-solving through discussions on mobile apps, can pave the way to establish and co-create knowledge using digital technology" (Mnkandla & Minnaar, 2017, p. 246).

Information and communication technology (ICT)-based learning has changed. The idea that today's youngsters are surrounded by and immersed in ICT has spread widely. Technology examples include smartphones, computers, tablets, and game consoles (Prensky, 2010). The upshot is that the present generation relies heavily on technology in many facets of their lives. Additionally, ICT literacy is widely recognized in the contemporary generation. Therefore, academics believe that ICT literacy is something instructors and the school should consider and improve upon throughout the learning process.

Understanding self-efficacy is necessary for knowledge acquisition and accomplishment; the concept includes students' awareness and desires for future success. Accordingly, the spread of information and communication technology led to essential adjustments and advancements in the educational system and increased self-confidence and ICT's effectiveness in the classroom. One of the most important motivating elements associated with student acceptance, use, and literacy of information and communication technology (ICT) is self-efficacy in the use of ICT (Rohatgi et al., 2016). It is an essential factor that helps students adjust to technological change, encourages lifelong learning, and might someday overtake competencies and talents in importance (Senkbeil & Ihme, 2017; Warschauer & Xu, 2018).

According to Hatlevik et al. (2018) and Senkbeil & Ihme (2017), students who are more comfortable and confident in their ability to adapt to new technologies are better able to handle challenges in the future, are more ready to use ICT for learning in school, and are more prepared to continue to develop their ICT skills throughout their lives. To help students in adjusting to the new average education, it is essential to continue integrating new ICT and boosting students' self-efficacy in the digital home learning environment (Bonanati & Buhl, 2021).

Muema et al. (2018) found a connection between suitable teaching methods and pupils' mathematical proficiency. ICT instruction was substantially connected with students' accomplishments compared to traditional methods. This implied that integrating ICT into instruction might improve student achievement. Ajisuksmo and Saputri (2017) state that students' attitudes affect their intellectual activities. The understudies will believe that science is essential, so they will want to increase their math learning achievement if they have an inspired mindset about math. In general, negative undergrads will be attempting to concentrate on science. In addition, studies show that 68.5% of math educators use the Internet for website searches, 44% use email, and 7.2% participate in online forum conversations (Keong et al., 2005). These percentages pertain to educators' use of ICT to gain access to resources for instruction other than textbooks. ICT has indirectly developed into a significant method for teachers to obtain teaching resources, including exercises, simulations, notes, and exchange of information. ICT is a tool that enhances the teaching-learning process and embraces the promise of a brand-new

solution to every educational issue (Oduma & Ile, 2014; Das, 2019).

According to Adeniji, and Abdullahi (2019), using ICT changes the teaching-learning process and fosters an excellent or good learning environment where students acquire knowledge in a self-directed, constructive, and active manner. ICT has changed traditional teaching and learning methods and prompted a request to reevaluate education in light of more contemporary circumstances (Ameen, Adeniji, & Abdullahi, 2019). The ICT is usually viewed as a vehicle to alter the instructional methodology and ways of learning and obtaining information. ICT should help students improve their problem-solving, communication, and lifelong math learning skills (Ameen et al., 2019). It should not be used to replace traditional teaching methods. Instead, it should be used to supplement or support them.

Teachers must prepare before implementing technology for teaching and learning (Saadati et al., 2014; Oktaviyanthi & Supriani, 2015). However, lacking TPACK makes the mathematics teacher ill-prepared to incorporate technology in teaching and learning (Bowers & Stephens, 2011). Math teachers only have a basic understanding of technology use (Kim, 2018). In addition, a math teacher who needs TPACK may have low levels of self- efficacy in integrating technology (Zelkowski et al., 2013). According to Unsal, Korkmaz, and Percin (2016), such teachers typically have a poorer likelihood of addressing the demands of their students in terms of learning. So, when technology needs to be incorporated into teaching and learning, mathematics teachers are happy—especially when they have poor self-efficacy.

As a result of their lack of confidence in their abilities, teachers with poor self-efficacy typically tend to avoid employing technology (Tezci, 2011). This will consequently impact their readiness to incorporate technology into their instruction (Lailiyah & Cahyono, 2017; Walker & Shepard, 2011). No matter how much they have mastered the subject, teachers with low self-efficacy may need help to deliver the desired results (Unsal et al., 2016) instead of educators with significant self-efficacy. To ensure the effectiveness of technological integration, math teachers must have a positive outlook or a sense of self-efficacy. Positive self-efficacy will help instructors feel more confident and resolute when they must overcome challenges in their work, such as integrating technology (Yau et al., 2015). Therefore, it is vital to assess, using TPACK, mathematics teachers' technology integration knowledge, and self-efficacy.

In their study, Alcantara et al. (2020) aimed to assess the level of integration of Information and Communication Technology (ICT) in the teaching and learning of mathematics among 77 junior and senior high school Mathematics teachers in the Division of Tanauan City. The researchers employed a combination of survey questionnaires, interviews, and focus group discussions (FGDs) to gather data for their investigation. A notable disparity exists in the utilization of Information and Communication Technology (ICT) in mathematics education as it relates to the number of years an individual has been engaged in the teaching profession. The challenges commonly identified were a lack of ICT facilities and training and a lack of confidence in using ICT. Based on the findings mentioned above, it is recommended that mathematics educators be provided with increased opportunities to engage in seminars and training programs focused on information and communication technology (ICT).

The study conducted by Pasco (2021) sought to investigate the impact of self-concept, teaching strategies, and peer pressure on the mathematics performance of a sample of 224 students from Grades 7-10 at a National High School, in Bukidnon, Philippines. The research employed a descriptive-survey correlational design. The findings indicate that the overall performance in mathematics is deemed satisfactory. Moreover, the students exhibit a positive self-perception in mathematics, most frequently encountering diverse instructional approaches implemented by their mathematics instructor. Teaching strategies and peer pressure variables revealed statistically significant disparities when categorized according to grade level. In contrast, the student's performance and self-concept variables in mathematics did not demonstrate any statistically significant distinctions. Nevertheless, it was found that only peer pressure had a notable impact on students' academic achievement in mathematics. Therefore, it is imperative to exercise caution regarding the adverse correlation between the variables. Conducting a comprehensive and rigorous qualitative investigation to augment the findings and gain a more profound comprehension of the relationship between the variables under consideration is advisable.

Hero (2022) investigated the potential relationship between Information and Communications Technology (ICT) literacy and self-efficacy among 135 Junior High School students enrolled in a private school in Obando, Bulacan, Philippines. The research design employed in this study is descriptive-correlational. The study's findings indicated that students in Junior High School possessed a moderate literacy level in Information and Communication Technology (ICT). Additionally, the results of this study revealed that Junior High School students expressed an average level of agreement when describing their ICT self-efficacy. Moreover, the correlational analysis utilizing Pearson's r indicated a significant association between Junior High School students' information and communication technology (ICT) literacy and their perceived self-efficacy in using ICT. Educational institutions should incorporate this domain in their yearly enhancement strategy for student services affairs. Educational institutions must prioritize this matter, as many private schools are currently at the forefront of incorporating information and communication technology (ICT) into their educational systems. These schools aim to enhance the ICT literacy and self-efficacy of Junior High School students by implementing an enrichment program focused on ICT integration.

Similarly, Zamir and Ali (2023) sought to address the existing knowledge gap by examining prospective teachers' perceptions regarding

their competence and integration of information and communication technology (ICT). Additionally, the researchers aimed to identify the reasons behind the reliance on technology and the challenges encountered while learning mathematics. The selection of participants was conducted using convenient and purposive sampling techniques. A sample size comprising 20 out of 30 individuals was chosen from the entire population. The data collection process involved using semi-structured interviews (SSI) and focus group discussions (FGD), while the subsequent analysis was conducted using thematic data analysis techniques. The study's results provided insights into the favorable attitudes of physical therapists toward integrating information and communication technology (ICT). It was observed that the reasons for utilizing technology differed among the participants. Despite the recognized significance of integrating Information and Communication Technology (ICT), inherent challenges exist related to its integration. These challenges include scanning online materials, encoding mathematical language, and addressing limited awareness of mathematics application software. The recommendations call for creating specialized programs that provide practical learning opportunities while addressing prospective teachers' obstacles in incorporating information and communication technology (ICT) for math education.

In their study, Zakaria and Khalid (2016) investigated the advantages and limitations of information and communication technology (ICT) encountered by educators in mathematics education. Synthesizing 20 relevant literature sources, the researchers identified several benefits of integrating ICT in mathematics instruction. These benefits encompassed the ability to generate student interest in mathematics, enhance academic performance, foster a disposition for lifelong learning, facilitate positive interactive relationships, and support constructivist learning principles. Mathematics educators have encountered various limitations when incorporating information and communication technology (ICT) into the instructional process. The constraints that have been identified encompass the educators' insufficient understanding of technology, limited access to training and educational resources related to information and communication technology (ICT), and a need for more technical assistance. Consequently, it is suggested that there be a rise in the provision of training opportunities for mathematics educators about computer utilization and integrating information and communication technology (ICT) in instructional practices. Providing technical support is crucial for fostering teacher motivation toward integrating information and communication technology (ICT) in their instructional practices. It is imperative to uphold students' favorable perceptions of acquiring mathematical knowledge. It is recommended that educators engage in exploration to ascertain the suitable technologies and applications that can be incorporated into teaching and learning mathematics.

Meanwhile, Donkor (2018) examined the obstacles hindering the integration of Information and Communication Technology (ICT) into the teaching and learning of Mathematics. The study focused on 185 in-service teachers from selected Senior High Schools in the Central Region of Ghana. The research design employed for this investigation was a descriptive survey design. The study findings indicated that the level of ICT integration among in- service teachers in teaching Mathematics was significantly low. Both internal and external factors exert considerable influence on integrating information and communication technology (ICT). However, the external factors exhibited higher predictability in determining the ICT integration level than the internal factors. The study suggested that department heads should arrange regular ICT training sessions to enhance teachers' competencies and reduce their anxiety, thereby increasing their willingness to incorporate ICT in the teaching and learning of Mathematics.

Abu Bakar et al. (2020) conducted an analysis of the mathematics teachers' self-efficacy in technology integration and Technological Pedagogical Content Knowledge (TPACK) based on gender and teaching experience. The study involved a sample of 66 mathematics teachers from national secondary schools. Descriptive statistics were used to analyze the collected data, including mean, percentage, and standard deviation. The researchers utilized a t-test to assess the mathematics teacher's self-efficacy in technology integration and Technological Pedagogical Content Knowledge (TPACK) concerning gender. Additionally, a one-way analysis of variance (ANOVA) was employed to examine the mathematics teacher's self-efficacy in technology integration and TPACK about the teaching experience. The Pearson correlation coefficient was also used to ascertain the correlation between the mathematics teacher's self-efficacy in integrating technology and Technological Pedagogical Content Knowledge (TPACK). The results indicated no statistically significant difference between genders regarding the mathematics teachers' self-efficacy and Technological Pedagogical Content Knowledge (TPACK) in the context of teaching experience. The study found a significant correlation between mathematics teachers' self-efficacy in technology integration and their Technological Pedagogical Content Knowledge (TPACK).

Regardless of gender, mathematics educators have consistently demonstrated strong self-efficacy when incorporating technology and introducing Technological Pedagogical Content Knowledge (TPACK) into their teaching practices. The findings suggest that gender and teaching experience do not significantly influence mathematics teachers' self-efficacy in integrating technology and possessing Technological Pedagogical Content Knowledge (TPACK). In future research about this study, it may be beneficial to incorporate additional variables, such as participants' academic qualifications and their prior exposure to technology-related coursework.

Mintah et al. (2023) examined educators' perspectives regarding incorporating Information and Communication Technology (ICT) in the instruction and learning of Mathematics. The researchers selected twenty- five (25) teachers and sixty (60) students from three schools, including two public mixed schools and one private mixed school, located in the Ga South Municipality. The study employed a mixed-method research design. The study results indicate that most teachers, precisely 95.8%, have chosen to refrain from incorporating

computer technology into their instructional practices, despite having access to computers within their educational institutions. Additionally, it was found that a majority of schools, precisely 83.3%, need more specialized software designed for the instruction of Mathematics on the computer systems within their laboratory facilities. Hence, it is advisable to install specialized software designed for teaching and learning Mathematics on the computers within the laboratories of Senior High Schools. This would facilitate mathematics educators in Senior High Schools to gain access to these software tools and incorporate them into their instructional practices.

In their 2020 study, Gómez-García et al. conducted a descriptive quantitative cross-sectional study to examine the key indicators associated with teaching mathematics and ICT. The study aimed to estimate the relationships between teachers individually and within clusters and analyze the impact of age, teaching experience, and gender on a sample of 73 high school teachers in the Autonomous City of Melilla, Spain. Integrating Information and Communication Technology (ICT) in education was linked to using ICT resources in the classroom. This integration highlighted that teacher exhibited greater autonomy in selecting diverse software options instead of using various hardware devices. Educators integrated technological tools with educational platforms to enhance the acquisition of mathematical knowledge among students. There is a discrepancy between the overall perception of mathematics educators regarding their level of digital proficiency and the implementation of digital tools and strategies within their instructional practices. The influence of gender was not observed.

Yang, et al. (2021) sought to investigate the impact of teacher-provided emotional support on students' math performance. Additionally, the researchers aimed to analyze the potential mediating influence of academic self-efficacy and math behavioral engagement in this relationship. The web-based survey involved the participation of 1,294 students enrolled in grades 3–5 and 7–8, hailing from 14 junior middle and primary schools in China. The study's findings indicated the following outcomes: (1) The relationship between the emotional support provided by teachers and the math performance of Chinese primary and middle school boys and girls was mediated by academic self-efficacy and math behavioral engagement. (2) The mediating pathway of academic self-efficacy and math behavioral engagement played a role in the relationship between teachers' emotional support and math performance among Chinese junior middle school boys and girls.

Hero (2020) examined the relationship between teachers' preparedness and acceptance of ICT integration and their actual ICT integration practices. The study focused on a sample of 72 private school teachers in the Obando, Bulacan, Philippines district. The research employed a descriptive-correlational survey methodology. The findings indicated that teachers were prepared to integrate information and communication technology (ICT) into their instructional practices. Furthermore, they acknowledge and embrace the fundamental beliefs and concepts of integrating information and communication technology (ICT) into the teaching process. Moreover, educators possess extensive knowledge and expertise in integrating information and communication technology (ICT) into instructional practices. The findings of the correlation analysis provided evidence that there is a significant relationship between teachers' preparedness and acceptance of ICT integration and their actual patterns of integrating ICT into their teaching. The school should enhance its training and professional development programs to equip teachers better to incorporate information and communication technology (ICT) into education. This will enable them to effectively implement ICT integration practices in their teaching methodologies.

Joanne Hardman (2019) reviewed the literature on ICTs in teaching/learning mathematics at an elementary school level. Findings from the review indicate that student achievement in mathematics can be positively impacted using technology, depending on the pedagogical practices used by teachers. Technology on its own has no significant impact on students' attainment. There is a dearth of findings regarding pedagogical variation with ICTs outside of a single meta-analysis that indicates that a "constructivist' approach to teaching/learning with technology is the most effective approach to conceptually developing students. In her scholarly work, Joanne Hardman (2019) critically examines the existing body of literature about utilizing Information and Communication Technologies (ICTs) in the context of mathematics education at the elementary school level. The review's findings suggest that technology in mathematics education can benefit student achievement, contingent upon teachers' pedagogical approaches. The independent influence of technology on students' academic achievement seems negligible. Limited research exists on pedagogical variation with information and communication technologies (ICTs), apart from a solitary meta-analysis that suggests a "constructivist" teaching and learning approach with technology is the most efficacious method for enhancing students' conceptual understanding.

In the light of these theories and related studies, this research on ICT integration and mathematics performance is conducted.

**3. Research Methodology**

This section presents the research design, the research flow, the research environment, the study's respondents, the instruments used, the procedures of the data gathering, and the statistical treatment.

### *3.1 Design*

The researcher employed a descriptive-correlational research design in determining the students' perception of ICT integration in Mathematics. A quantitative approach to research, the descriptive correlational technique seeks to characterize the connection between variables without modifying them (Johnson & Smith, 2019). To offer a thorough description of the variables under investigation, this design involves gathering data on several variables and examining the patterns and correlations among them. Instead of proving a cause-and-effect link, the main objective of the descriptive correlational technique is to find and characterize the patterns of association between variables. This approach is frequently employed in exploratory research or when manipulating variables is impractical or unethical.

### *3.2 Environment*

The study was conducted in selected Philippine national high schools. The first one is located in Talisay City, Cebu, Philippines. It is a public secondary school located established in 2003 and serves students from the barangays of Tanke and San Roque. The school offers the K-12 Curriculum which includes Junior High School programs (Grades 7 – 10) only with a total of 664 students this school year 2022-2023. The school had 24 teachers, supervised and managed by a school principal. The teachers are classified according to their positions as follows: 6 Teacher IIIs and 18 Teacher I.

### *3.3 Respondents*

The respondents of the study were the Grade 7 students of Philippine national high schools. This study employed random sampling techniques to select the respondents in Grade 7 students of the aforementioned school.

**Table 1**

**Distribution of the Respondents**

| National High School (NHS) | N | % |
|---|---|---|
| NHS A | 181 | 56.21 |
| NHS B | 50 | 15.53 |
| NHS C | 91 | 28.26 |
| **TOTAL** | **322** | **100.00** |

The distribution of the respondents is given in Table 1. A total of 322 7$^{th}$ Grade learners participated in the research. The majority of the learners came from NHS A comprising 56.21 %. NHS B had the least number of respondents with 15.53 %.

### *3.4 Instrument*

This study employed a two-part adaptive survey questionnaire from Bam (2021) and a Math achievement test. The first part of the questionnaire gathers the participants' demographic information such as age, gender. The second part consists of a 25-question 5-point Likert Scale on the perceptions of the students on the ICT integration in teaching mathematics. These items are divided according to the affective domain of Bloom's Taxonomy: Receiving, Responding, Valuing, Organizing, and Characterizing and divided into five subscales: (a) Student's Perspectives about the reception of integration of ICT in Teaching Mathematics, (b) Student's perspective to response to the integration of ICT in teaching mathematics, (c) Student's Perspective to valuing the integration of ICT in teaching mathematics, (d) Student's perspectives to organize the Integration of mathematics in teaching mathematics, and (e) Student perspectives to characterizing ICT integration in teaching mathematics. A Mathematics achievement test consisting of 40 item questions compiled from the assessment questions in the module made by Division.

### *3.5 Data Gathering Procedure*

A letter was addressed to the Schools Division Superintendents of the Division of Talisay City for approval of the conduct of the study. A copy of the approved request was presented to the School Heads of the Philippine National High Schools and faculty members.

After the letter was approved, administration and collection of data followed. The teacher discussed the first lesson about set to the selected Grade 7 students with the integration of ICT in teaching. The lesson was discussed for two weeks. After the discussion, a Math achievement test was conducted to measure the student's level of achievement in Math. Survey questionnaires were then personally distributed to the respondents. The respondents were given ample time preferably 20-30 minutes to answer the survey questionnaire.

Data was collected and submitted to the statistician for statistical treatment. It was subjected to further presentation, analysis, and interpretation of the gathered data with the guidance of the research adviser.

### *3.6 Data Analysis*

**Simple Percentages**. This determined the proportion of the respondents from the total population that belongs to the cited category. Percentage is calculated by taking the frequency in the category divided by the total number of participants and multiplying by 100%.

**Frequency Counts**. This was for tallying the number of respondents that belong to the same category. The tally or frequency count is the calculation of how many people fit into a certain category or the number of times a characteristic occurs. This calculation is expressed by both the absolute (actual number) and relative (percentage) totals.

**Weighted Means**. Computation of the mean was employed to describe the level of perception of the respondents towards ICT integration in terms of the following: (a) Student's Perspectives about the reception of integration of ICT in Teaching Mathematics, (b) Student's perspective to response to the integration of ICT in teaching mathematics, (c) Student's Perspective to valuing the integration of ICT in teaching mathematics, (d) Student's perspectives to organize the Integration of mathematics in teaching mathematics, and (e) Student perspectives to characterizing ICT integration in teaching mathematics. Weighted Mean is an average computed by giving different weights to some of the individual values.

**Pearson's r.** This test the significant relationship between the respondents' perception on ICT integration and performance of the respondents in math is a measure of linear correlation between two sets of data. It is the ratio between the covariance of two variables and the product of their standard deviations; thus, it is essentially a normalized measurement of the covariance, such that the result always has a value between −1 and 1.

### *3.7 Ethical Considerations*

Before the questionnaire was distributed, the researcher discussed the process of the study and emphasized the importance thereof. Express assurance was provided to the student respondents that whatever data gathered for this study was dealt with with utmost care and confidentiality.

**Data Privacy**. Finally, the essence of Republic Act 10173 otherwise known as the Data Privacy Act of 2012 was discussed to cement the absolute pledge of protecting their privacy in the conduct of the study, therefore without their approval and authorization, no pertinent data or information in this research would be accessed, transferred, or copied.

## 4. Results and Discussion

In this section, the analysis and interpretation of the gathered data illustrate the demographics of the respondents in terms of age, gender, the highest educational attainment of their parents, and the overall monthly income of their families. Likewise, the respondents' views on integrating Information and Communication Technology (ICT) into mathematics instruction and mathematics performance are discussed. Additionally, the study explores the relationship between respondents' perceptions of ICT integration and their mathematics performance.

### *4.1 Profile of the Respondents*

The profile of respondents from the Philippine national high schools as regards their age, gender, highest educational attainment of their parents, and the overall monthly income of their families are herein discussed. The summary of results is given in Table 2.

Table 2
**Age and Gender of the Respondents**

| Age (in years) | Female | | Male | | Total | |
|---|---|---|---|---|---|---|
| | f | % | f | % | f | % |
| 15 and above | 6 | 4.11 | 13 | 12.62 | 19 | 7.63 |
| 13 to 14 | 32 | 21.92 | 26 | 25.24 | 58 | 23.29 |
| 11 to 12 | 108 | 73.97 | 64 | 62.14 | 172 | 69.08 |
| **Total** | **146** | **100.00** | **103** | **100.00** | **249** | **100.00** |

**Age and Gender.** Out of the 249 respondents, 146 were females, 58.63 percent of the total sample. The remaining 103 respondents, or 41.36 percent, were males. Of the sample, 172 students are between 11-12 years old, 69.08 percent. This was followed by 58 students between the ages of 13-14. Furthermore, 19 students or 7.63 % of the sample, were aged 15 years and above.

Table 2 illustrates the relationship of age and gender on ICT integration in teaching Mathematics. Research offered various explanations for the observed differences in computer abilities among adolescents and adults (Sáinz & Eccles, 2012). Particularly, the respondents' gender has been identified as an essential factor. Prevalent theory and research suggest that firmly held beliefs and cultural stereotypes might contribute to gender differences in technology usage and computer skills (Cheryan et al., 2013; Master et al., 2016). As a consequence, these might also be responsible for gender differences in measured ICT skills as well as in self-reported confidence in one's ICT skills. Follow-up research pertained to students' gender role orientations as a potential moderating influence that might affect the emergence of gender differences in ICT literacy. Students emphasizing more traditional gender roles might exhibit gender differences in favor of boys—as found in initial studies on ICT literacy (e.g., Hakkarainen et al., 2000; Volman et al., 2005), whereas respondents with more egalitarian views might show no gender differences.

The access and motivation generated by ICTs, by age and gender in children aged 10–13 years, can vary across different types of settings (Stuchlikova, L., 2017; Segura, A.G.; et al., 2020). Thus, girls have other interests in motivation, participation, cooperation, and technological addiction than boys (López, J. et al., 2019). While girls use ICT for educational purposes, boys use it for social interaction practices (Vekiri, I, 2013). Age and gender are not essential factors in the achieving educational outcomes related to digital skills (Castellano, E.A.; Pantoja, A., 2017).

**Parents' Highest Educational Attainment.** Parents' educational attainment substantially impacts a child's ability to succeed academically, as well as their prospects for employment and general life. This element might affect the study's findings. Table 3 shows the respondents' parents' highest educational attainment.

Table 3
**Parents' Highest Educational Attainment**

| Educational Attainment | Mother | | Father | | Total | |
|---|---|---|---|---|---|---|
| | f | % | f | % | f | % |
| College Graduate | 48 | 15.58 | 31 | 9.75 | 79 | 12.62 |
| College Level | 33 | 10.71 | 31 | 9.75 | 64 | 10.22 |
| High School Graduate | 101 | 32.79 | 101 | 31.76 | 202 | 32.27 |
| High School Level | 74 | 24.03 | 60 | 18.87 | 134 | 21.41 |
| Elementary Graduate | 22 | 7.14 | 31 | 9.75 | 53 | 8.47 |
| Elementary Level | 30 | 9.74 | 64 | 20.13 | 94 | 15.02 |
| **Total** | **308** | **100** | **318** | **100** | **626** | **100.00** |

Based on the data shown in Table 3, it can be observed that a third (32.27 %) of the mothers and fathers surveyed were high school graduates. The data also indicates 12.62% have a college education. The results demonstrate that parents' educational attainment significantly influences students in various aspects of their academic journey. Research consistently shows a positive correlation between higher parental education levels and academic achievement among their children. Parents with higher educational backgrounds often provide a conducive learning environment, support effective study habits, and actively engage in their children's educational development.

Parent involvement has been defined and measured in multiple ways, including activities that parents engage in at home and school and positive attitudes parents have towards their child's education, school, and teacher (Epstein, 1996; Grolnick & Slowiaczek, 1994; Kohl, Lengua, & McMahon, 2000). Several recent studies highlighted the distinction between the activities parents partake in and the attitude parents have toward education.

**Combined Family Monthly Income.** Total monthly family income is a basic measure of household and financial resources, consisting of income from several different sources. These factors express the socio-economic status of the family. Understanding its dynamics is critical to the families' financial capabilities and how it can affect the well-being of the students.

According to Table 4, thirty (58.39 percent) of the combined family's monthly income is below 10,000. Additionally, only 12 families, or 6 percent of the total household income are more than 30,000.

Table 4
**Combined Family Monthly Income**

| Monthly Income (in pesos) | f | % |
|---|---|---|
| Above 30,000 | 12 | 3.73 |
| 25,001-30,000 | 14 | 4.35 |
| 20,001-25,000 | 18 | 5.59 |
| 15,001-20,000 | 32 | 9.94 |
| 10,001-15,000 | 58 | 18.01 |
| 10,000 and below | 188 | 58.39 |
| **Total** | **322** | **100.00** |

Table 4 demonstrates that the majority (60%) of the families studied have a monthly income of less than 10,000.00 and below. According to the National Statistical Coordination Board (2016), many socio-economic factors also play a part in students' academic life development. The Philippines is a multicultural state. Thus the relationship between education, poverty alleviation, and socioeconomic development has been the subject of many researchers. In the statement of Weinstein (2010) of Developing Economies, 80% of the Filipino poor live in the country's rural areas. These are towns located deep in the mountains and the rice fields. The population density in the rural parts of the country is low, and there is a corresponding deficiency in schools and classrooms. In a study of Barry (2008) of Wichita State University revealed that socio-economic factors are also said to be great contributors in the academic performance of many students (Ali et al., 2013). Socio-economic factors are the social and economic experiences and realities that help mold one's personality, attitudes, and lifestyle. The factors can also define regions and neighborhoods. (Chase, 2007).

### *4.2 Level of Perception on ICT Integration in Teaching Mathematics*

It is important to understand the views of teachers, students, and stakeholders' views regarding integrating information and communication technology (ICT) in mathematics education. These impressions influence the selection and implementation of teaching strategies, the student's level of participation, and the ultimate achievement of learning outcomes. Therefore, these aspects must be considered when considering the impact of ICT on mathematics education. Table 5 shows the respondents' perception of ICT integration in teaching mathematics.

The information presented in Table 5 regarding how respondents view the integration of ICT into mathematics instruction suggests that the majority have a positive understanding of the benefits and usefulness of ICT in teaching mathematics. An analysis of the data shows that the weighted means for the responses ranged from 3.16 Neutral (I feel mathematics teaching through ICT is more expensive and difficult to operate.) to 4.35 Very Positive (ICT helps to prepare assignments and other project works.), indicating a consistently positive overall assessment.

Table 5

**Level of Perception of the Respondents on ICT Integration in Teaching Mathematics**

| S/N | Indicators | WM | Verbal Description |
|---|---|---|---|
| 1 | I accept all mathematical concepts while integrating ICT in mathematics. | 4.04 | Very Positive |
| 2 | The Integration of ICT in teaching makes mathematics class more interesting. | 4.11 | Very Positive |
| 3 | My willingness increases while integrating ICT in teaching mathematics. | 3.91 | Positive |
| 4 | ICT eases to receive feedback from the teacher. | 4.11 | Very Positive |
| 5 | My participation increaseswhile Integrating ICT in teaching mathematics. | 4.12 | Positive |
| 6 | I feel confident while learning mathematical concepts and integrating ICT into teaching mathematics. | 4.04 | Positive |
| 7 | The use of ICT in teaching mathematics is more challenging and tedious. | 3.47 | Neutral |
| 8 | ICT helps to prepare assignments and other project work. | 4.35 | Very Positive |
| 9 | I used to communicate with teachers while mathematics is being taught through ICT. | 3.96 | Very Positive |
| 10 | I use ICT to find mathematical concepts in different social media. | 3.88 | Very Positive |
| 11 | ICT facilitates group activities and sharing of culture | 3.98 | Very Positive |
| 12 | ICT eases to overview of each lesson in a short period of time. | 3.98 | Positive |
| 13 | It is easy to learn mathematical concepts making group of students. | 4.07 | Very Positive |
| 14 | The interruption in ICT-based software often prevents my mathematics learning. | 3.37 | Neutral |
| 15 | Integrating ICT in mathematicsimproved my problem-solving skills and logical reasoning. | 4.02 | Positive |
| 16 | Integration of ICT in teaching mathematics increases the motivation of students in the learning process. | 3.94 | Very Positive |
| 17 | The integration of ICT in mathematics is necessary to increase students' interest in mathematics. | 3.96 | Very Positive |
| 18 | The availability of ICT-based software is not sufficient. | 3.33 | Neutral |
| 19 | I feel mathematics teaching through ICT is more expensive and difficult to operate. | 3.16 | Neutral |
| 20 | I learned a lot about the utility of mathematics integrating ICT inteaching mathematics | 4.08 | Positive |
| 21 | I would like to integrate ICT in my future teaching-learning activities. | 4.07 | Very Positive |
| 22 | Integrating ICT in teaching mathematics eases finding information about the topic. | 4.01 | Very Positive |
| 23 | Course content of ICT-based software is not sufficient. | 3.16 | Neutral |
| 24 | Integration of ICT in teaching mathematics is flexible and provides comfortable learning. | 4.02 | Very Positive |
| 25 | I'm happy with the software equipment of my curriculum. | 4.27 | Very Positive |
| | **Aggregate Weighted Mean** | **3.90** | **Positive** |

***Legend:*** *4.21-5.00-Very Positive; 3.41-4.20-Positive, 2.61-3.40-Neutral; 1.81-2.60-Negative; 1.00-1.80-Very Negative*

The data reveals that the overall weighted mean is 3.90, interpreted as Positive by the respondents who hold a favorable attitude toward incorporating ICT in mathematics education.

This result encourages teachers to implement ICT in the teaching-learning process. Information and Communications Technology (ICT) has gone through innovations and transformed our society that has totally changed the way people think, work and live (Grabe, 2007). As part of this, schools and other educational institutions that are supposed to prepare students to live in "a knowledge society" need to consider ICT integration in their curriculum (Ghavifekr, Afshari & Amla Salleh, 2012). Integrating technology in education is a complex task due to its dynamic nature. Hence, planning for ICT integration in education is critical for improvement and development. Previous research shows that due to the issues and challenges related to the use of learning technologies in the Malaysian education system, ICT integration and implementation is a complex process which requires strategic planning by the policy and decision makers (Hashim, 2007; Ghavifekr & Sufean, 2010; Zellweger, 2006). Kozma and Anderson (2002) claim that ICTs are transforming schools and classrooms by bringing in new curricula based on real world problems, providing scaffolds and 17 tools to enhance learning, giving students and teachers more opportunities for feedback and reflection, and building local and global communities that include students, teachers, parents, practicing scientists, and other interested parties. Similarly, Hepp et al. (2004) state that the roles ICTs play in the educational system can be pedagogical, cultural, social, professional and administrative.

### *4.3 Level of Mathematics Achievement of the Respondents*

The degree of mathematics proficiency displayed by the respondents in order to evaluate educational effectiveness as well as developing methods for dealing with different learning necessities is a major factor. The Table 6 shows the level of mathematics achievement of the respondents.

Table 6
**Level of Mathematics Achievement of the Respondents**

| Level | Numerical Range | f | % |
|---|---|---|---|
| Outstanding | 33 - 40 | 41 | 12.73 |
| Very Satisfactory | 25 - 32 | 129 | 40.06 |
| Satisfactory | 17 - 24 | 133 | 41.30 |
| Fairly Satisfactory | 9 - 16 | 19 | 5.90 |
| Poor | 0 - 8 | 0 | 0.00 |
| **Total** | | **322** | **100.00** |
| *Mean* | | *22.54* | |
| *St. Dev.* | | *3.49* | |

Table 6 presents data showing that the majority of respondents, specifically 133 students or 41.30 percent out of 322 respondents, attained scores indicative of Satisfactory performance. This suggests a moderate level of proficiency in the subject, facilitated by the integration of information and communication technology (ICT) into the teaching of Mathematics. Furthermore, 129 respondents, constituting 40.06 percent of the total, achieved Very Satisfactory scores, denoting a comparable level of competence in the lesson with the support of ICT integration. Notably, 41 students, or 12.73 percent of the participants, demonstrated Outstanding performance, signifying a thorough understanding of the lesson's competencies using ICT in teaching Mathematics. It is noteworthy that none of the respondents received scores categorizing their performance as Poor.

Incorporating technology in the classroom has been touted as a solution (Dobransky, 2015; Fletcher, 2014; Morgan, 2015; Smirnova & Bordonaro, 2014), particularly in light of the greater use of technology in society and in careers. Research has been mixed, some showing that integrating technology in teaching math leads to improved student learning (Ertmer et al., 2012; Fletcher, 2014; Shirley et al., 2011).

What is needed is a way to connect technology with learning value (Zelenak, 2015). Others have shown the importance of this in trying to train teachers to use interactive technology in teaching mathematics, notably by using the TPACK framework (Hofer et

al., 2016), which focused on understanding a teacher's flexible knowledge of digital tools and media integration in the instructional process while considering technological, pedagogical, and content interactions.

### *4.4 Significance of the Relationship Between the Respondent's Perception of ICT Integration and Mathematics Achievement*

Pearson's r correlation coefficient was computed and the *t*-test of the significance of r was used to determine the significance of the correlation between respondents' use of ICT and their proficiency in mathematics.

Table 7 shows the significance test of the significance of the relationship between the respondents' perception of ICT integration and their Mathematics achievement. The *p*-value of 0.426 was found to be greater than the alpha value of 0.05 level of significance. Thus, there is not enough evidence to reject the null hypothesis.

Table 7
**Test of the significance relationship between the respondents' perception of ICT integration and their Mathematics achievement**

| Variables | *r*-value | Strength of Correlation | *p*-value | Decision | Result |
|---|---|---|---|---|---|
| ICT Integration and Mathematics Achievement | 0.115 | Negligible Positive | 0.426 | Do not reject Ho | Not Significant |

**significant at p < 0.05 (two-tailed)*

Therefore, there is no significant relationship between respondents' perception of ICT integration and their mathematics achievement.

The educational application of Information and Communication Technology (ICT) involves students employing computers or similar technological devices for assignments and communicating academic concerns with peers and educators. The influence of incorporating Information and Communication Technology (ICT) into academics on student results is a topic that continues to be a subject of active discourse. According to Meng et al. (2019), students' perceived ICT competence refers to their ICT-based knowledge and abilities that can be applied to accomplish ICT-related tasks. There needs to be more research findings about the impact of perceived information and communication technology (ICT) proficiency on students' academic achievement. The tremendous potential of ICT in promoting the learning outcome with the latest knowledge without obstructing accessibility and distance limitations and yet straightening students' thinking skills is undeniable (Education Blueprint, 2013). With ICT integration in the classroom, students can engage in interactive tasks with a broader range of information and knowledge during their learning. At the same time, the teachers' beliefs and attitudes will influence them to integrate ICT into their teaching practice (Hatlevik & Arnseth, 2012; Rampersad, 2011).

## 5. Conclusion

Planning ICT integration in education is considered an essential element for improvement and development. This might be accomplished by giving teachers worthwhile learning opportunities to enhance their ICT integration skills and attitude towards ICT since this might affect students' performance in the classroom. Additionally, the digital divide among the respondents may also be considered a factor that can affect their performance since students belong to low-income families and some of the profiles of the respondents could also be regarded as a factor that could affect their performance in school.

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