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DIGITAL PROFICIENCY AND SELF-EFFICACY OF TEACHERS AND LEARNERS' ACADEMIC ACHIEVEMENT IN TAGOLOAN, MISAMIS ORIENTAL

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Abstract: ***In the evolving educational landscape, technology integration is crucial for shaping teaching practices and impacting student outcomes. This study aimed to investigate the teachers' digital proficiency, self-efficacy, and learners' academic achievement in Tagoloan East and West District for the School Year 2022-2023. Specifically focusing on the respondents' level of digital proficiency, respondents' level of self-efficacy, learners' academic achievement, and the relationship between teachers' digital proficiency, self-efficacy, and learners' academic achievement. Using a descriptive-correlational design with an adopted set of survey questionnaires, the study employed mean, standard deviation, and Pearson product-moment correlation to evaluate teachers' digital proficiency, self-efficacy, and the academic achievement of intermediate learners. Respondents showed very high digital proficiency, with Content and Knowledge scoring highest. They also demonstrated a very high level of self-efficacy. Learners achieved satisfactory ratings in English, Math, Science, and Filipino. However, it is interesting to note how good teachers are with technology and how confident they feel did not seem to have a big impact on how well the learners do in their main subjects. This suggested that even though teachers are proficient with technology and students are meeting expectations, it does not necessarily mean that learners will excel academically. In conclusion, teachers' proficiency and self-efficacy had no significant bearing on learners' academic achievement. To enhance teaching, teachers should integrate new technology skills for more engaging lessons and participate in classes to improve online safety measures. Also, teachers are recommended for enhancing Math and Filipino lessons with new materials or tools. Finally, school heads should keep checking progress because given the lack of a clear connection between teachers' digital proficiency and self-efficacy and student achievement, ongoing monitoring and evaluation over time can help identify clear relationships that might emerge gradually, providing deeper insights into the teaching-learning process.***

Keywords: *Digital proficiency, Self-efficacy, academic achievement, educational landscape, Technological Pedagogical Content Knowledge (TPACK)*

I. INTRODUCTION

In today's digital world, using technology in education is important because it can improve how teachers teach and how well students do in their studies. The data presented by the Department of Education Division of Misamis Oriental reveal that most learners who took the RX Adobe Assessment scored low in proficiency in English subject and nearly proficient in Filipino and Science. This highlights the urgent need to explore how teachers' digital proficiency and self-efficacy can impact learners' academic achievement especially in the subjects Science, English, Filipino, and Math. Since technology is now a big part of teaching and learning, it's crucial to understand how teachers' technology skills and confidence in using it relate to how well students do in school.

The researcher, who works as an assistant ICT coordinator at a school in Tagoloan East District, has also seen teachers face some challenges when trying to use technology effectively. One problem is that teachers have different levels of knowledge about technology. As observed, some teachers feel unsure or not very good at using technology in their lessons. This can make it hard for them to use digital tools and resources to make learning better for students.

Another issue is that teachers may not have enough opportunities for training. They might not have access to programs or workshops that help them learn how to use technology in the best way. The researcher knows that it's important to give teachers the right skills and knowledge to use technology in their teaching. Teachers also need help using technology for administrative tasks and reporting. Using digital platforms for administrative work can be tough, especially for teachers who aren't very comfortable with technology. If teachers get more support in these tasks, they can focus more on teaching and helping students.

On this light, this research aims to find out how much teachers' digital proficiency influence students' learning and achievements. This study gives useful information to make education better, improve teacher training, and help students do well in Tagoloan, Misamis Oriental. The steady flow of information and communication technology (ICT) into schools has presented new challenges for teachers, including how to introduce students to modern technology and utilize it effectively to improve learning experiences. This underscores the importance of teachers being confident in their technology skills and equipped with 21st-century competencies to adapt to evolving needs and possibilities (Falloon, 2020).

In the Philippines, the "Enhanced Basic Education Act of 2013" (Republic Act No. 10533) emphasizes providing every student with access to a globally competitive curriculum, including information, media, and technology skills. The DepEd Order No. 21, s. 2019, which outlines the Policy Guidelines on the K-12 Basic Education Program, emphasizes nurturing holistically developed Filipino graduates with 21st-century skills, including proficiency in information, media, and technology (IMT) skills.

Research has consistently demonstrated that teachers' digital proficiency positively influences student learning outcomes. Teachers with higher levels of digital proficiency are more likely to use technology in ways that engage students and promote active learning (Technological Pedagogical Content Knowledge (TPACK) in Action: Application of Learning in the Classroom by Pre-service Teachers (PST), 2021). Understanding the level of digital proficiency among grade 4 to 6 teachers in Tagoloan East and West District is essential to improve student academic achievement. On the other hand, challenges persist in achieving digital literacy goals, as evidenced by UNICEF's report on "Digital Literacy in Education Systems across ASEAN" (2021). Respondents highlighted obstacles such as unqualified teachers, insufficient or poor-quality training, and inadequate school support. Therefore, it becomes crucial to address the issue of digital competence among teachers to ensure successful ICT integration and transformation of education (Cabero et al., 2020).

Teachers' self-efficacy in technology integration also plays a vital role. Studies have shown that higher levels of self-efficacy are associated with increased technology integration in the classroom (Teo, 2018). Identifying areas where grade 4 to 6 teachers may require additional support and training to enhance their confidence in using digital tools is crucial for effective technology integration.

Focusing on the specific context of Tagoloan East and West District allows tailoring interventions to address the unique needs of teachers and pupils in the area. Context-specific studies, as emphasized by Rains (2018), are vital in understanding the relationship between teachers' digital proficiency, self-efficacy, and student outcomes, providing practical and relevant insights for local educational policies and practices.

Hence, this research on digital proficiency and self-efficacy among Grade 4 to 6 teachers in Tagoloan East and West District, along with its relationship to pupils' academic achievement, is crucial for improving teaching practices, enhancing student engagement, and promoting better learning outcomes. By addressing the challenges faced by teachers in integrating technology into their classrooms, this study is targeted to pave the way for more effective and meaningful technology integration in the Philippine education system.

Literature and Related Studies

Digital Proficiency

Zendejas (2023) teachers implement a variety of best practices and instructional strategies to promote academic achievement and engagement through the implementation of instructional technology. The teachers implement the usage of various software programs, such as Google Workspace and YouTube, to provide and collect feedback to improve academic achievement and build positive relationships with students.

The use of technology breakthroughs in education has revolutionized literacy practices and conventional techniques (Cabero-Almenara, Gutierrez-Castillo and Palacios-Rodriquez, 2020). It has become vital for teachers when proposing new solutions to real-world issues (Guillén-Gámez & Mayorga-Fernández, 2020), and as a result, student motivation has improved (Laskaris, Kalogiannakis, & Heretakis, 2017).

Technological Knowledge

Furthermore, technological knowledge is becoming increasingly crucial in students' lives outside of the classroom, as it can enhance their understanding of difficult subjects and promote collaboration among peers (Kurt, 2018). Recognizing these benefits, modern educational theory suggests that teachers should integrate technology into their lessons. However, the concept of technological knowledge is more comprehensive than just being aware of technology; it involves comprehending how, why, and when to use technology effectively (Mazorodze & Buckley, 2019).

Pedagogical Knowledge

Moreover, pedagogical knowledge is a specialized form of knowledge that is crucial for teachers to create effective learning environments for all students (Guerriero, 2017). It is widely recognized that a high level of pedagogical knowledge is essential for competent teaching. This knowledge encompasses the overarching ideals, values, and goals of education, which teachers apply in various aspects of their work, such as lesson planning, student assessment, and classroom management techniques.

Content Knowledge

In addition, several studies have consistently shown that teachers' content knowledge has a significant positive impact on students' academic achievement. However, despite its importance, many teachers in various countries still lack the necessary content knowledge for effective teaching. For instance, a study conducted by The World Bank in 2017 across seven Sub-Saharan African countries, representing nearly 40 percent of the region's population, found that only a small proportion of fourth-grade teachers had mastered their students' language curriculum, and a significant number of teachers struggled with basic tasks, such as subtracting two-digit numbers for math (Bold, Filmer, Martin, Molina, Rockmore, Stacy, Svensson, and Wane 2017).

Pedagogical Content Knowledge

Teachers face various challenges in their day-to-day work, including solving content-related problems. Numerous international studies have shown that the success of students largely depends on teachers' Pedagogical Content Knowledge (PCK) (Kaiser & Read, 2020). The journey to becoming an expert educator is complex, requiring teachers to acquire diverse knowledge bases, abilities, and competencies. One critical aspect is the development of Pedagogical Content Knowledge (PCK), which involves how instructors present and frame subject-matter knowledge to facilitate student learning. Students constantly construct their understanding based on prior knowledge, life experiences, interactions with peers and teachers, and other factors. Therefore,

teachers need to elicit students' prior knowledge and help them build more informed conceptual understandings, building upon their existing knowledge.

Technological Content Knowledge

Technological Content Knowledge (TCK) is a concept that highlights the interconnectedness of technology and content knowledge in education (Kurt, 2018). TCK refers to teachers' understanding of how technology and content can interact and complement each other in the teaching and learning process. It involves recognizing how subject matter can be effectively conveyed using various technological tools and determining which technologies are best suited for specific subjects or classes.

Technological Pedagogical Knowledge

Technological Pedagogical Knowledge (TPK) emphasizes the reciprocal relationship between technology and pedagogy in education. TPK refers to educators' understanding of how various technologies can be effectively utilized in teaching and how incorporating technology can influence their instructional practices (Santos & Castro, 2021). This knowledge entails being familiar with the pedagogical advantages and limitations of different technological tools, considering the specific subject matter and developmental appropriateness of educational designs and strategies. By having this knowledge, teachers can make informed decisions about which technology to use, depending on how well it aligns with their unique educational approach and supports specific pedagogical objectives.

Technological Pedagogical Content Knowledge

Technological Pedagogical Content Knowledge (TPACK) represents an expanded framework that goes beyond the three fundamental elements of content, pedagogy, and technology. TPACK measures the effectiveness of delivering lessons using technology, considering the interplay of these three essential components (Santos & Castro, 2021). It recognizes that the integration of technology should be appropriate for learning across all subject areas, and that each element—content, pedagogy, and technology—is integral to the teaching and learning process.

Self-Efficacy

Barni, Danioni, and Benevene (2019) reported that teachers' self-efficacy has been consistently established as a significant factor for the efficacy of the teaching activity, as it is a dominant force influencing teachers' performance in the classroom and their commitment to the endeavor. Therefore, improved teacher self-efficacy can lead to enhanced teacher mental health, job satisfaction, and student academic achievement.

Furthermore, the study conducted by Tondeur et al., (2017) examined the relationship between teachers' pedagogical beliefs and their use of digital tools. The results revealed that teachers with constructivist beliefs were more likely to use technology for student-centered, collaborative activities and project-based learning. In contrast, teachers with more traditional beliefs favored technology for administrative tasks or as supplemental resources rather than transformative tools for teaching and learning.

Information and Data Literacy

Teachers' self-efficacy in information and data literacy is crucial in the digital age where access to vast amounts of information is readily available. The study by Afolabi, Opeyemi, Afolabi, Oluwaseyi and Aragbaye (2022) cited that the major information resources that are available and mostly used by teachers are reference books, internet facilities and online resources, textbooks, dissertations / theses / projects, journals, conference proceedings / papers and newspapers / magazines. Teachers' ability to locate and access information; evaluate reliability of information; find the needed information; organize, analyze, interpret, and evaluate information enhances effective use of information resources.

Communication and Collaboration

Teachers who know how to communicate and work with others can talk to each other online while keeping their privacy and identities safe. They know how to properly cite sources, can find and join online groups, plan and run online meetings, and can recognize and react to hate speech in online talks. This makes the digital learning environment safe and welcoming for everyone.

However, Midtlund, Instefjord and Lazareva (2021) cited in their study that the greater focus on the teacher's professional digital competence will be useful to help pupils understand how they can utilize digital tools for communication and collaboration at school. There are several factors affecting this. The most apparent obstacle for the teachers is other aspects of basic digital skills, limited time available, immature pupils, and lack of sufficient digital competence. Digital interaction and communication also appear, for some of the teachers, as an unnecessary and complicated part of schoolwork. Midtlund et al. say that it might seem somewhat prearranged and artificial to practice communication in a classroom context where all the pupils are in the same room at the same time.

Digital Content Creation

Self-efficacy in digital content creation is important for teachers to have if they want to encourage imagination, innovation, and fun learning. It gives teachers the tools they need to make useful digital products that help students learn and improve the education process as a whole.

The findings in the study of Syawal (2020) stated that digital content media that can be sourced from YouTube, Facebook, and TV broadcasting, or teaching videos made by the teacher are expected to be utilized to enable students to learn effectively. Use of digital content in teaching English is very helpful for students in understanding material during the pandemic, especially for the millennial generation. Upon using digital content, the learning process becomes easier because it can be directly integrated into various applications such as WhatsApp groups, Zoom, Google Meet, and so on.

The Teachers as Content Creators: The 21st Century Shift From Learning Delivery to Learning Design - 21st Century Learning Conference (2021) noted teachers' ability in digital creation. It has become clear that teachers need to take on the role of learning experience designers and content creators, trends that started with the advent of digital education and have only intensified considering current world events.

Safety

Today, being safe online is just as important as being safe from danger in the real world. For a safe and responsible digital learning setting, it's important that teachers know how to keep themselves safe. By knowing about and taking precautions for digital safety, teachers can protect themselves, their students, and their digital tools from possible dangers and teach students how to be good digital citizens.

To encourage digital safety among students, teachers and administrators must have current knowledge and awareness of digital safety topics (Hollandsworth, Donovan & Welch 2017). Berger and Wolling (2019) did a survey study with more than 300 teachers

in Germany to learn more about what teachers do to help students learn how to be safe online. Findings showed that teachers who knew more about digital safety rules were more likely to think that digital safety skills were very important and were more likely to teach about them in the classroom.

Problem-Solving

Self-efficacy in problem-solving is important for teachers to successfully navigate the digital world and use technology to its fullest potential in the classroom. Teachers can beat challenges, try out new ideas, and use digital tools and resources successfully in their classrooms if they are confident in their problem-solving skills. According to Tongchai (2021), the professional development program had significantly improved teachers' self-efficacy toward enhancing thinking and problem-solving skills and teachers' teaching experiences significantly have an impact too.

Academic Achievement

The Department of Education stipulated in their DO 73, S. 2012 – Guidelines on the Assessment and Rating of Learning Outcomes Under the K to 12 Basic Education Curriculum | Department of Education, 2012 that the attainment of learning outcomes as defined in the standards shall be the basis for the quality assurance of learning using formative assessment. They shall also be the focus of the summative assessments and the basis for grading at the end of instruction. These learning outcomes are defined by level: knowledge, process, or skill, understanding, and products and performance. These levels are reflected in the class record and given corresponding percentages.

According to the adoption of the Basic Education Development Plan 2030 on May 30, 2022, as stated in DO 024, S. 2022 – Department of Education, 2022, student learning outcomes are statements of what a learner is expected to know, understand, and be able to demonstrate after completing the learning process. This form of expressing learning outcomes has important implications for student-based learning, especially in remote learning contexts, as it allows learners to monitor their own progress and set standards for achievement. The learning outcomes expressed in this manner also facilitate the inclusion of 21st-century skills, such as problem-solving, information literacy, and critical thinking, across all key subjects in the curriculum.

Numerous studies have shown the positive impact of Information and Communication Technology (ICT) on student learning. Monserate (2018) found that student academic performance is highly influenced by effective teaching and the teacher's computer literacy and competence in technology. Similarly, Naik, Chitre, Bhalla and Rajan (2020) demonstrated that incorporating technology in the classroom, even with limited access and training, positively affected student learning. Hussain, Suleman, Naserr-ud-Din and Shafique (2017) revealed that ICT significantly affects students' academic capability and retention in subject areas, particularly when teachers effectively utilize technology in their teaching, making it essential to integrate ICT in schools and provide special training to teachers.

Statement of the Problem

The goal of this study was to look at the digital proficiency, self-efficacy, and learners' academic achievement of teachers in 10 schools in Tagoloan East and West District, Tagoloan, Misamis Oriental, during the School Year 2022-2023.

Specifically, this study sought to address the following questions:

1. What is the respondents' level of digital proficiency in terms of Technological Knowledge, Pedagogical Knowledge, Content Knowledge, Pedagogical Content Knowledge, Technological Content Knowledge, Technological Pedagogical Knowledge, and Technological Pedagogical Content Knowledge?
2. What is the respondents' level of self-efficacy considering information and data literacy, communication and collaboration, digital content creation, safety and problem-solving?
3. What is the learners' academic achievement as measured by their general weighted average in Math, English, Science and Filipino?
4. Is there a significant relationship between the teachers' digital proficiency and self-efficacy and the learners' academic achievement?

Theoretical Framework

The study was based on the TPACK framework created by Punya Mishra and Matthew J. Koehler. TPACK is a theory that explains the knowledge teachers need to effectively teach a subject and use technology. It combines technological, pedagogical, and content knowledge for successful integration of educational technology. Mishra and Koehler introduced the TPACK framework in 2006 at Michigan State University (Kurt, 2018; Canada, 2022).

Another theory that this study was anchored on is the Bloom's Digital Taxonomy according to Ray (2021) is a technology-friendly update of the classic framework of Bloom's Taxonomy by Benjamin Bloom. The integration of digital technologies and tools with the traditional Bloom's Taxonomy framework to address the unique challenges and opportunities presented by digital learning environments. By integrating digital tools and technologies into Bloom's Taxonomy, teachers can design learning environments that foster students' higher-order thinking, creativity, collaboration, critical analysis, and problem-solving skills. The revised framework provides teachers with a guide for designing learning activities that incorporate digital resources, promote digital literacy, and prepare students for success in the digital age.

In addition, the theory of updated Bloom's Taxonomy acknowledges the significance of self-efficacy in using digital tools and resources, which can influence teachers' motivation and ability to effectively integrate technology. Self-Efficacy Theory of Bandura (1977) as cited by Barni et al. (2019), Bandura's Self-Efficacy Theory posits that individuals' beliefs in their own capabilities influence their motivation, behavior, and performance. Self-efficacy refers to an individual's belief in their ability to successfully execute specific tasks or behaviors in order to achieve desired outcomes. It is a key determinant of human motivation and behavior.

Scope and Limitations of the Study

The study involved teachers from 10 schools in Tagoloan East and West District, Tagoloan, Misamis Oriental. The participants were the Grade 4 to Grade 6 teachers. The main instrument in gathering the data was the adopted questionnaire. The researcher personally gathered the data by going to the different schools which were involved in the study. The gathered data were limited to the responses to the questionnaires that were retrieved.

The study dealt with the interplay of relationships between the independent, and dependent variables. The independent variables include the respondents' level of digital proficiency based on their technological knowledge, pedagogical knowledge, content knowledge, pedagogical content knowledge, technological content knowledge, technological pedagogical knowledge, and technological pedagogical content knowledge. Teacher's self-efficacy that can be broken down into five subcategories: information and data literacy; communication and collaboration; digital content creation; digital content safety; and problem-solving. However, the dependent variables were focused on the learners' academic achievement based on their general weighted average from the four subjects.

While the study presents valuable insights, it is essential to acknowledge the limitations that may arise during its implementation. One such limitation stems from the proximity of the schools within Tagoloan East and West District. Geographical proximity may pose challenges in distributing and retrieving questionnaires, necessitating additional coordination and resources. Additionally, the accessibility issues encountered, particularly with two schools during rainy days, may lead to delays in data collection and potential difficulties in maintaining a representative sample.

Another limitation of the study was that the collection of the general weighted average of pupils in math, science, English, and Filipino may not include all teachers from Grades 4-6. This was because some teachers in these grades may be subject teachers who do not have an advisory class. As a result, the study might not have captured the complete picture of the relationship between teachers' digital proficiency and self-efficacy and pupils' learning outcomes across all subjects. It is important to acknowledge this limitation and consider its potential impact on the findings and conclusions of the study.

Despite these limitations, the study was expected to provide valuable insights into the digital proficiency levels of teachers, their self-efficacy, and the impact on pupil academic achievements in Math, English, Science, and Filipino within the specified context and timeframe.

II. RESEARCH METHODOLOGY

Research Design

This study used the descriptive-correlation method to accomplish the investigation's aims and objectives. The descriptive-correlational method is suitable for examining the relationships between variables and describing their characteristics (Descriptive Correlational Design Definition & Goals - 577 Words | Research Paper Example, n.d.). In this study, it can be used to describe the digital proficiency and self-efficacy levels of Grade 4 to 6 teachers, as well as the learning outcomes of their pupils. It allows for the analysis of the associations or correlations between these variables.

Through this method, data can be collected using adopted questionnaires to measure the levels of digital proficiency and self-efficacy of the respondent. Descriptive statistics can be employed to summarize and present the data, providing an overview of the distribution and central tendencies of the variables.

Furthermore, correlational analysis can be conducted to explore the relationships between digital proficiency, self-efficacy, and learning outcomes. This analysis helps to determine the strength and direction of the associations between these variables, providing insights into how they are related to each other.

In this study, the independent variables which were the level of digital proficiency of elementary teachers and self-efficacy were tested to find the relationship that existed to the learners' academic achievement as the dependent variable.

Study Setting

The research was conducted in Tagoloan East and West Districts, which are part of the Misamis Oriental Division in Northern Mindanao, Philippines. Tagoloan is a first income-class municipality in the province of Misamis Oriental, deriving its name from the words "tago" (meaning "hide") and "lo-an" (meaning "to negotiate"). Strategically located to the east of Cagayan de Oro City and the south-east of Macajalar Bay, Tagoloan is a residential and industrial municipality with a population of approximately 80,319 people as of the 2020 census.

Covering a land area of 7,938 hectares, Tagoloan represents 2.24 percent of Misamis Oriental's total area. Its largest barangay, Sta. Ana, accounts for 37 percent of the municipality's land area, while Barangays Rosario and Sta. Cruz occupy relatively larger areas (11.2%) compared to the other nine barangays. The land is suitable for various uses, including protection forest, plantation forest, rice fields, tree and vine cultivation, pasture, and cultivated crops. The Tagoloan River, located beside Barangay Poblacion, is the 13th largest river system in the Philippines.

Agriculture plays a significant role in Tagoloan's economy, supporting agri-industrialization, but it faces challenges due to urbanization and industrial encroachment. Major agricultural crops include corn, coconut, mango, peanut, rice, banana, and papaya. Poultry production, especially chicken, has seen substantial growth due to broiler contract growing facilitated by multinational companies. However, the populations of cattle, carabao, swine, and goat-sheep have decreased due to reduced interest in raising and high investment costs.

Tagoloan benefits from fishery resources, with fishing grounds in Barangays Baluarte, Sugbongcogon, and Casinglot Macajalar Bay, contributing to the local economy. The majority of Tagoloan's population is Roman Catholic, with the Church of Nuestra Señora de la Candelaria serving as a prominent religious landmark.

The Tagoloan East District has six public schools, including Maribojoc Integrated School, Mohon Elementary School, Natumolan Elementary School, Rosario Elementary School, Sta. Ana Elementary School, and Sta Cruz Elementary School. The Tagoloan West District has four public schools, namely Baluarte Elementary School, Gracia Elementary School, Casinglot Elementary School, and Tagoloan Central School.

The Division Office, located in Cagayan de Oro City, is responsible for overseeing the Department of Education in Misamis Oriental, with the Schools Division Superintendent and education program supervisors leading its operations.

In the setting of the study, the Tagoloan East and West Districts, there were a total of 150 public school teachers from Grades 4 to 6 across the six schools in the Tagoloan East District and four schools in the Tagoloan West District. These schools were spread across the municipality's interior barangays, with one of the schools in Tagoloan West District situated near the national highway.

Study Population and Sampling Technique

The respondents of the study were the total population of Grade 4 to 6 Public School Teachers of Tagoloan, Misamis Oriental, for the School Year 2022-2023. In this study, the respondents were one hundred fifty (150) teachers, as shown in Table A. These are the actual respondents who accomplished and returned the survey questionnaires.

Table A
Distribution of Respondents by School

Name of School	Teachers
Baluarte Elementary School	17
Casinglot Elementary School	7
Gracia Elementary School	18
Maribojoc Integrated School	3
Mohon Elementary School	14
Natumolan Elementary School	8
Rosario Elementary School	4
Sta. Ana Elementary School	15
Sta. Cruz Elementary School	12
Tagoloan Central School	52
TOTAL	**150**

The sampling method used in this study was purposive, particularly the total population sampling. The main goal of purposive sampling is to focus on specific characteristics of a population that are of interest, which will best enable the researcher to answer research questions. The total number of respondents is one hundred fifty (150).

Research Instrument

This study employed a two-part survey questionnaire to collect data on key aspects of the research. The first part of the questionnaire deals on digital proficiency from TPACK framework such as technological knowledge, pedagogical knowledge, content knowledge, pedagogical content knowledge, technological pedagogical knowledge, technological content knowledge and technological pedagogical content.

This was an adopted questionnaire from Schmid, Brianza and Petko (2020) on their study "Developing a short assessment instrument for Technological Pedagogical Content Knowledge (TPACK.xs) and comparing the factor structure of an integrative and a transformative model" was utilized on a study. Each indicator has 4 options: 4=Highly Proficient, 3= Moderately Proficient, 2= Proficient, 1= Not Proficient. This questionnaire section gathered valuable insights into the proficiency of teachers in utilizing technologies for effective teaching and learning.

The second part of the questionnaire was dedicated to assessing the second independent variable, which was self-efficacy. To measure self-efficacy accurately, the researcher adopted the questionnaire used by Mannila, Nordén and Pears (2018) in their study on "Digital Competence, Teacher Self-Efficacy, and Training Needs." This section of the questionnaire aimed to gather specific information about teachers' confidence and belief in their ability to effectively integrate digital tools and technologies into their teaching practice. By using this questionnaire, the study could explore the relationship between self-efficacy and the utilization of digital resources in the teaching process, providing valuable insights into the teachers' perceptions and attitudes towards technology integration in education.

Statistical Treatment of Data

In this study, several statistical tools were employed to analyze and interpret the results and findings. Firstly, frequency and percentage distribution were utilized to express the frequency distribution of variables as a percentage of the total frequency, thereby providing a clear understanding of the distribution patterns within the data.

Secondly, the weighted mean was calculated to determine the average value of independent variables. This statistical measure considers the different weights assigned to each variable, providing a more accurate representation of their importance and contribution to the overall analysis. Additionally, the standard deviation was computed to quantify the amount of variability or dispersion present in the data points around the weighted mean. This measure gave insight into the spread of the data and how individual data points deviate from the average value.

Lastly, the Pearson Product Moment of Correlation was employed to assess the significant relationships among variables. This statistical technique measures the strength and direction of the linear relationship between two variables, enabling the researcher to identify any associations or dependencies between different factors under investigation.

Ethical Considerations

Participants were more likely to engage in truthful and transparent responses if they were certain that their identities and personal data were safeguarded, so it was essential to prioritize their privacy and anonymity. The subsequent ethical considerations must be resolved:

Prior to collecting data, it was important to obtain informed consent from the respondents. This ensures that they were completely aware of the study's goal, procedures, potential risks, and benefits. It also guarantees that participants provide express agreement, highlighting the voluntary nature of their participation and the freedom to withdraw at any point without facing any consequences. These ethical considerations ensure the preservation of participants' identities and responses by maintaining confidentiality and anonymity; employ coding or anonymization methodologies to safeguard confidential data; guarantee that only those with proper authorization can access identifiable data, preserving privacy during the study process and in any future reporting or dissemination.

Participant Respect: Show reverence for the dignity, entitlements, and self-governance of all participants. Recognize and adapt to the various backgrounds, viewpoints, and cultures present in the research setting. Ensure the absence of any negative consequences or unease for the participants and emphasize their welfare during the study.
Data Security: Enforce stringent data security protocols to thwart illegal access, misuse, or breaches of acquired data. Ensure the secure storage of information and employ encryption or other suitable techniques to safeguard data integrity.
Ethical Review: An institutional review board (IRB) or ethics committee was consulted to obtain ethical approval to guarantee that the research design and data handling techniques adhere to ethical standards and guidelines.

III. RESULTS AND DISCUSSION

Problem 1. What is the respondents' level of digital proficiency based on TPACK considering technological knowledge, pedagogical knowledge, content knowledge, pedagogical content knowledge, technological content knowledge, technological pedagogical knowledge, technological pedagogical content knowledge?

Table 1: Teacher-Respondents' Level of Digital Proficiency

TPACK's Digital Proficiency	Mean	SD	Interpretation
Technological Knowledge	3.31	0.62	Highly Proficient
Pedagogical Knowledge	3.50	0.59	Highly Proficient
Content Knowledge	3.57	0.58	Highly Proficient
Pedagogical Content Knowledge	3.53	0.56	Highly Proficient
Technological Content Knowledge	3.44	0.61	Highly Proficient
Technological Pedagogical Knowledge	3.45	0.61	Highly Proficient
Technological Pedagogical Content Knowledge	3.46	0.62	Highly Proficient
Total	**3.37**	**0.60**	**Highly Proficient**

Legend: **3.26-4.00** (Strongly Agree – Highly Proficient) **1.76 – 2.50** (Disagree - Proficient)
2.51-3.25 (Agree – Moderately Proficient) **1.00-1.75** (Strongly Disagree – Not Proficient)

Table 1 shows a summary distribution of the respondents' digital proficiency based on the Technological Pedagogical Content Knowledge (TPACK) of DepEd. The **overall** mean of 3.37 (SD=0.60) with a description of **Strongly Agree** indicates that the respondents are **Highly Proficient** in terms of the variables under TPACK. This reveals that teachers are proficient at blending technology effectively into their teaching methods while also having a strong grasp of the subject matter. Hence, this result hints that teachers are adept at integrating technology into their teaching practices while considering the content and pedagogical strategies. This finding further suggests that teachers have embraced technology to enhance their subject matter expertise and deliver lessons more effectively.
The observed proficiency in the TPACK framework carries several positive implications. It suggests that teachers are better equipped to create engaging and interactive learning experiences for their students. This competency also indicates their willingness to adapt to evolving educational landscapes where the intelligent use of technology is increasingly important. Such proficiency could lead to improved student outcomes, increased adaptability to technology-driven learning models, and the development of a digitally literate student population.
These findings and insights are strongly supported by the study titled "Examining teachers' technological pedagogical and content knowledge in the era of cloud pedagogy." The study's focus is on validating the TLPACK model, a comprehensive framework that specifically measures teachers' ability to blend technology, pedagogy, and content knowledge, offers a theoretical and methodological basis for the observed proficiency. The study's results likely further support the positive outlook on teachers' readiness to effectively navigate the challenges of the digital education era (Hsu & Chen, 2019).
Furthermore, educational technology, according to Bostan, Derya, and Sabriye (2021), has become increasingly essential across various fields of education. It's crucial to integrate technology in line with the content being taught and the pedagogical approach used. Teachers' TPACK enables them to select the right techniques and methods to incorporate technology into the classroom, ensuring a successful learning and teaching process.
This alignment between technology, pedagogy, and content knowledge underscores the effectiveness of TPACK in enhancing teaching and learning experiences.
The variable, **Content Knowledge**, obtained the **highest mean** of 3.57 (SD=0.58) with a description of **Strongly Agree**. This means that the respondents are **Highly Proficient** on their knowledge about the content of their teaching subjects. Having a good understanding of the subject helps teachers explain things clearly and answer students' questions well. Additionally, they can provide relevant examples and insights that make the material more engaging and relatable for learners. This finding suggests that teachers generally possess strong knowledge of their content areas. This expertise serves as a crucial foundation for effective teaching practices, including clear explanations, insightful examples, and the ability to address students' questions thoroughly. This focus on strong content knowledge offers several key benefits. As observed, teachers who are well-versed in their subjects are better equipped to create engaging and stimulating learning experiences by connecting content to real-world scenarios and making the material relatable for learners. Additionally, content knowledge likely translates to increased teacher confidence, which further enhances the learning environment.
The "Technological Pedagogical content knowledge (TPACK) in action: Application of learning in the classroom by pre-service teachers (PST)", reinforces these findings and insights. By investigating pre-service teachers' TPACK proficiency, it validates the significance of subject matter knowledge – highlighted by your observations. Furthermore, Santos and Castro (2021) the study's findings on the need for more structured approaches to technology integration indicate a key area where even teachers with strong

content knowledge can be supported to further translate their expertise into effective digital-age teaching practices. It was also acknowledged by Patman (2021) that teachers need to be well-versed in the subjects they teach to be effective educators.

On the other hand, **Technological Knowledge** obtained the **lowest mean** of 3.31 (SD=0.62) with a description of **Strongly Agree**. The data revealed that although this variable got the lowest mean, still the interpretation of its high level of proficiency is similar to Content Knowledge which got the highest mean. The result reveals that although the mean of the seven variables may vary, the interpretation is similar. This implies that the respondents have assessed themselves that their Digital Proficiency is High. This interesting finding reveals that, even though Technological Knowledge scored slightly lower, teachers still see themselves as highly proficient in technology. This interesting result suggests that teachers perceive themselves as technologically capable, even though they might acknowledge certain areas for improvement. This disconnects between TK scoring lower and teachers' perception of high digital proficiency raises important questions. Perhaps teachers feel confident due to their proficiency in specific technologies essential for their teaching roles rather than possessing extensive TK across the board. This perception is supported by the findings of Akram, Abdelrady, Al-Adwan, and Ramzan (2022) the systematic review on technology integration, which indicates that teachers in Pakistan generally hold a positive view of incorporating technology into their teaching practices.

Additionally, the systematic review's emphasis on barriers like slow internet and lack of training implies that external factors play a role rather than simply a lack of teacher knowledge. This highlights the need to consider both internal (skills) and external (resources) factors influencing teachers' ability to successfully implement technology in the classroom.

The systematic review aligns with the findings and subsequent insights. The review's findings on teachers' positive outlook towards technology integration mirrors the high level of confidence expressed by respondents, despite the potentially lower TK score. Moreover, the focus on technological development needs in the review acknowledges that further support and training in specific skills (even if overall confidence is high) is crucial for successful implementation, strengthening the idea of a potential mismatch between TK and overall proficiency.

Problem 2. What is the respondents' level of self-efficacy in terms of Information and Data Literacy, Communication and Collaboration, Digital Content Creation, Safety, and Problem-solving?

Table 2: Teacher-Respondents' Level of Self-Efficacy

Self- efficacy	Mean	SD	Interpretation
Information and Digital Literacy	3.44	0.60	Very High
Communication and Collaboration	3.32	0.68	Very High
Digital Content Creation	3.29	0.66	Very High
Safety	3.23	0.64	High
Problem-Solving	3.23	0,70	High
Overall	**3.30**	**0.66**	**Very High**

Legend: **3.26-4.00** (Very true to me – Very High) **1.76 – 2.50** (Untrue to me - Low)
2.51-3.25 (True to me - High) **1.00-1.75** (Very untrue to me – Very Low)

Table 2 shows the summary distribution of the respondents' level of self-efficacy based on some variables. The **overall** mean of 3.23 (SD=0.70) with a description of **Very true of me** indicates that the respondents have a **Very High** level of self-efficacy. This indicates that teachers feel good about their own abilities and have a positive view of technology, and they are more likely to try new ways to teach and use technology to help students learn. This result insinuates how important it is to create a supportive environment that helps teachers feel good about their own abilities and have a positive view of technology. By giving teachers the confidence and skills they need to use technology in the classroom successfully, schools can encourage new ideas and make learning better for all students. It was stated in the study of Coban and Atasoy (2019) how important self-efficacy is for encouraging new ways of teaching and utilizing technology effectively in the classroom.

Specifically, **Information and Digital Literacy** obtained the **highest mean** of 3.44 (SD=0.60) with a description of **Very true of me**. The result indicates that most of the respondents have a **Very High level** of self-efficacy in terms of Information and Digital Literacy. This result signifies a Very High level of self-efficacy among educators in navigating information and digital literacy skills. As stated by Fraillon et al. (2019) in the era of information overload, this competency is crucial for educators to critically evaluate, utilize, and teach digital information effectively.

Meanwhile, **Safety and Problem Solving** got the **lowest mean** scores of 3.23 with standard deviations 0.64 and 0.70 respectively. The result indicates that the respondents have a **High level** of self-efficacy in terms of these two variables. While still categorized as High, these results suggest a slightly lower confidence level in these specific areas. Safety and Problem Solving received the lowest mean scores, suggesting slightly lower teacher confidence in these specific areas. This could be attributed to several factors. The complexity of online safety, with its constantly evolving threats like viruses, cyberbullying, and privacy concerns, might make teachers feel less confident in their ability to keep up with the rapidly changing digital landscape. Additionally, technology-based problem-solving often demands creative thinking and troubleshooting skills, areas where teachers might feel less secure compared to more structured aspects of their teaching. It is also possible that these domains require specialized knowledge, highlighting the need for specific training opportunities to fully develop these skills. These potential insights emphasize the importance of providing teachers with targeted support to boost their confidence and proficiency in these crucial technology-related domains. As indicated by Teo et al. and Bandura, safety, encompassing online security and environmental impact awareness, and Problem Solving, reflecting technical troubleshooting capabilities, may require targeted support and professional development initiatives.

Problem 3. What is the learners' academic achievement as measured by their general weighted average in Mathematics, English, Science, and Filipino during the school year 2022-2023?

Table 3: Learners' Academic Achievement as Measured in their General Weighted Average

Subject	Overall General Weighted Average	SD	Description
Mathematics	84%	0.55	Satisfactory
English	85%	0.55	Satisfactory
Science	85%	0.55	Satisfactory
Filipino	84%	0.55	Satisfactory
Overall	**85%**	**0.55**	**Satisfactory**

Table 3 presents the summary distribution of the learners' academic achievement as measured by their General Weighted Average (GWA) in the four core subjects during the school year 2022-2023.

The data revealed that the learners have almost similar academic achievement in the four core subjects. They have obtained a GWA of 85% (SD=0.55) in both **English** and **Science** which means that they have a **Satisfactory** rating in these two subjects. This suggests that the curriculum delivery and student engagement strategies employed in these subjects have been effective in facilitating a harmonized level of understanding and proficiency among learners. Therefore while a satisfactory rating is commendable, there is still room for growth and improvement.

Encouraging learners to strive for excellence and providing them with the necessary support and resources can help them reach their full potential and achieve greater academic success. On the other hand, the learners have obtained 84% (SD=0.55) both in **Mathematics** and **Filipino** which means that they have a **Satisfactory** rating for these two subjects.

The data disclosed that there is a need for the learners to achieve further in order to obtain a Very Satisfactory academic achievement in the four core subjects. By striving for higher levels of proficiency, learners can enhance their understanding and mastery of key concepts in Mathematics and Filipino. This not only improves their academic performance but also prepares them for future challenges and opportunities.

However, there is a slight contrast in the performance of Mathematics and Filipino, which recorded an overall GWA of 84% (SD=0.55). While this still falls within the Satisfactory rating, it prompts a closer examination of the factors influencing performance specifically in Mathematics and Filipino.

It is essential to look deeper into the teaching methodologies, instructional resources, and teacher-student interactions in these subjects to identify any challenges or opportunities for improvement. By identifying specific areas of concern or potential areas for enhancement in Mathematics and Filipino, educators can tailor interventions or adjust teaching strategies to better support learners' academic achievement.

The study on STEM professional development aligns with the discussion about improving Mathematics and Filipino teaching (Hill, Lynch, Gonzalez, and Pollard 2020). Both emphasize the importance of supporting teachers to boost student results. The study finds that professional development works best when it focuses on building teachers' knowledge of the subjects they teach and how students learn. This mirrors the discussion's point about looking closely at the specific teaching methods used in Mathematics and Filipino to find areas for improvement. Ultimately, their study shows that targeted teacher development can lead to better student outcomes, a goal shared by the broader discussion.

Moreover, achieving a very satisfactory rating in all core subjects demonstrates a well-rounded academic proficiency, which can open doors to various academic and career pathways. It signifies a deeper understanding and application of knowledge, which is essential for success in higher education and the workforce.

Expanding on the summary distribution of learners' academic achievement in the four core subjects, the data underscores a remarkable consistency in their performance across English, Science, Mathematics, and Filipino.

The consistent ratings across all four core subjects present an opportunity for educators to implement integrated strategies that leverage learners' diverse strengths and areas of growth. This means that rather than treating each subject in isolation, educators can develop approaches that bridge the commonalities in achievement across subjects.

The study on 21st Century Competencies and Integrated Curriculum of Drake and Reid (2020) aligns with the discussion by emphasizing the importance of teaching methods that connect different subjects. This historical look at integrated curriculum highlights its effectiveness in developing essential skills for success in higher education and the workforce. The study underscores how well-rounded academic proficiency, as mentioned in the discussion, is fostered through an integrated approach. It further emphasizes that an integrated learning model helps students bridge the gaps between English, Science, Math, and Filipino, leading to a deeper understanding of subjects that is crucial for future success.

For example, if learners demonstrate similar proficiency levels in English, Science, Mathematics, and Filipino, educators can design lessons that integrate concepts from multiple subjects. This approach encourages learners to see the interconnectedness of different topics and fosters a more holistic understanding of the curriculum. By addressing subject-specific challenges collectively and embracing integrated teaching methodologies, educators can provide a more enriched learning experience.

Furthermore, while the learners have achieved a commendable Satisfactory rating across the core subjects, there is potential to elevate academic achievement further. By recognizing and capitalizing on the uniformity in academic performance, educators can explore integration in their instructional practices. This could involve collaborative lesson planning, interdisciplinary projects, or thematic units that draw on concepts from various subjects. This holistic perspective may prove beneficial in fostering a more comprehensive and interconnected understanding of the subjects among the learners.

Problem 4: Is there a significant relationship between the teacher-respondents' level of digital proficiency as well as their level of self-efficacy and the learners' academic achievement?

Table 4: Results of the Test of Relationship between the Teachers' Digital Proficiency and the Learners' Academic Achievement

Teachers' Digital Proficiency	Learners' Academic Achievement												
	ENGLISH			MATH			SCIENCE			FILIPINO			
	r- value	*p-value*	*Interpretation*	*r- value*	*p-value*	*Interpretation*	*r- value*	*p-value*	*Interpretation*	*r- value*	*p-value*	*Interpretation*	*Overall*
Technology Knowledge	-0.057	0.473	NS	0.013	0.868	NS	-0.001	0.985	NS	-0.056	0.485	NS	NS
Content Knowledge	0.042	0.595	NS	0.07	0.383	NS	0.039	0.624	NS	0.01	0.896	NS	NS
Pedagogical Knowledge	-0.005	0.955	NS	0.044	0.58	NS	0.011	0.895	NS	0.018	0.818	NS	NS
Pedagogical Content Knowledge	0.028	0.727	NS	0.066	0.405	NS	0.042	0.603	NS	0.037	0.645	NS	NS
Technological Content Knowledge	0.025	0.751	NS	-0.02	0.800	NS	-0.015	0.856	NS	-0.039	0.627	NS	NS
Technological Pedagogical Knowledge	0.082	0.302	NS	0.063	0.429	NS	0.052	0.516	NS	0.044	0.586	NS	NS
Technology Pedagogy and Content Knowledge	0.06	0.451	NS	0.032	0.693	NS	0.035	0.661	NS	0.052	0.514	NS	NS

Legend: Significant if p-value < 0.05 Ho is Rejected if Significant Ho is Accepted if Not Significant

Table 4 presents the results of the statistical test of significant relationship between the teacher-respondents' level of Digital Proficiency and the learners' academic achievement as measured in their General Weighted Average in Mathematics, English, Science, and Filipino during the school year 2022-2023.

The data disclosed that there is **no significant relationship** between the teachers' level of digital proficiency in all the sub-variables and the learners' academic achievement in Mathematics, English, Science, and Filipino. Hence, the null hypothesis is accepted. The result of the statistical test implies that the teachers' digital proficiency has no bearing on the learners academic achievement.

There is no strong link between the two, which suggests that teachers' proficiency with technology might not directly affect how well their students do in school. However, it is important to look into other things that might have an effect. There are many other factors that could affect how well students do in school. For example, academic success is affected by things like the way teachers teach, the classroom environment, how involved parents are, how involved students are, and their socioeconomic background.

Also, the absence of a significant relationship between teachers' digital proficiency and student achievement highlights that digital skills alone do not automatically translate into better academic outcomes. While technology can be a powerful tool, it is how it is used in those matters. Simply being proficient with digital tools does not guarantee that a teacher will use them in ways that meaningfully enhance learning within specific subjects like Mathematics, English, Science, and Filipino.

Several potential reasons could contribute to this finding. Firstly, effective technology use requires specific pedagogical skills alongside digital ones. A teacher might be fantastic at using technology but needs help translating those skills into lesson plans that effectively support learning objectives. Secondly, student background significantly impacts academic performance. Factors like access to technology at home and socioeconomic status can heavily outweigh the effect of a teacher's digital proficiency. Finally, the study might not have captured the full picture. Perhaps the teachers' digital proficiency was being used well for things like communication or organization, which, while important, do not directly impact grades in core subject areas.

Furthermore, the nature of digital proficiency itself may vary among educators. According to Saad & Sankaran (2022) some teachers may excel in integrating technology into their instructional practices, others may be less adept. Additionally, the effectiveness of technology integration may depend on various contextual factors, such as access to resources, training opportunities, and institutional support. The scope of digital proficiency may extend beyond the immediate classroom setting. It would be valuable to explore whether teachers' digital skills are applied in broader educational contexts, such as online resources, interactive platforms, or collaborative digital tools.

The study on technology-enhanced creativity aligns with the discussion about the broader scope of digital proficiency (Bereczki & Kárpáti, 2021). The study goes beyond looking at teachers simply using tools in the classroom. It digs into how teachers think about technology and creatively use these tools to change the learning process itself. Their study also highlights the importance of teacher beliefs in shaping their technology use. Overall, this resonates with the discussion's point that digital proficiency involves using technology in innovative ways that can indirectly impact and enhance student learning.

Additionally, examining the specific digital tools and platforms utilized by teachers in their instructional practices could offer valuable insights. Certain technologies might have a more pronounced impact on academic achievement, and understanding these

details could inform targeted professional development initiatives or instructional design strategies (Mhlongo, Mbatha, Ramatsetse and Dlamini 2023).

Table 5: Results of the Test of Relationship between the Teachers' Self-Efficacy and the Learners' Academic Achievement

Teachers' Self-Efficacy	Learners' Academic Achievement												
	ENGLISH			MATH			SCIENCE			FILIPINO			
	R value	*p-value*	*Interpretation*	*r- value*	*p-value*	*Interpretation*	*r- value*	*p-value*	*Interpretation*	*r- value*	*p-value*	*Interpretation*	*Overall*
Information and Data Literacy	0.034	0.674	NS	0.027	0.737	NS	0.032	0.687	NS	0.042	0.599	NS	NS
Communication and Collaboration	-0.053	0.505	NS	-0.058	0.471	NS	-0.077	0.334	NS	-0.043	0.590	NS	NS
Digital Content Creation	-0.083	0.301	NS	-0.074	0.355	NS	-0.095	0.233	NS	-0.080	0.314	NS	NS
Safety	-0.099	0.217	NS	-0.033	0.681	NS	-0.073	0.362	NS	-0.107	0.177	NS	NS
Problem-Solving	-0.067	0.400	NS	-0.111	0.162	NS	-0.108	0.177	NS	-0.119	0.135	NS	NS

Legend: Significant if p-value < 0.05 Ho is Rejected if Significant Ho is Accepted if Not Significant

Table 6 presents the results of the statistical test of significant relationship between the teacher-respondents' level of Self-Efficacy and the learners' academic achievement as measured in their General Weighted Average in Mathematics, English, Science, and Filipino during the school year 2022-2023.

The data disclosed that there is **no significant** relationship between the teachers' level of level of self-efficacy in all the sub-variables and the learners' academic achievement in Mathematics, English, Science, and Filipino. Hence, the null hypothesis is accepted. This means that teachers' levels of self-efficacy do not seem to have a clear effect on how well their students do in school. The statistical test results supported the null hypothesis, which said that these variables did not have a significant link with each other.

The finding that teacher self-efficacy does not necessarily correlate with student achievement was aligned with the study of Jerrim, Sims, and Oliver (2023) it suggests that simply believing in one's ability to teach is not enough to guarantee positive academic outcomes. While self-efficacy is a positive teacher quality, it likely needs to be combined with other factors to translate into strong student performance. For instance, teachers may need specific instructional strategies or curriculum knowledge to effectively utilize their self-efficacy in the classroom.

Several reasons could explain this result. One possibility is that the study measured self-efficacy in a way that does not directly translate to student learning. For example, the survey might have focused on general teaching confidence rather than self-efficacy in specific skill areas, like math or science. Additionally, factors outside of teachers' control, such as student background knowledge or class size, might have a larger influence on achievement than self-efficacy. It is possible that the impact of self-efficacy varies depending on the teacher and the context. A teacher's strong self-efficacy in one subject area, like reading, may not necessarily translate to equally strong effects in another subject, like math.

The teacher efficacy and student connection study of Summers et al. (2017) supports the idea by showing that self-efficacy may not affect pupils directly. The study indicates that teacher self-belief affects student-teacher relationships rather than academic performance. This illustrates the complicated effects of self-efficacy on learning. In addition, the study finds disparities across different types of teacher self-efficacy, supporting the idea that teacher traits and circumstances might affect self-efficacy.

Furthermore, school leadership and professional development opportunities can influence how teachers' self-efficacy translates into classroom practice. It is known that things like teaching methods, classroom climate, student motivation, parental involvement, and socioeconomic status can affect how well a student does in school. There may also be complex interactions between teachers' self-efficacy views and the different learning styles and abilities of their students. The study of Çoban et al., aligns with the discussion by showing that school leadership can play a big role in how teacher self-efficacy translates into action in the classroom.

Also, different trainers may have different ideas about what self-efficacy is and how to measure it. Some teachers may have a lot of confidence in their own abilities in certain areas, while others may have different skills and areas where they need to improve. Teachers' beliefs about their own abilities can also be affected by things outside of their control, like help from the school, chances to improve their skills, and the relationships they have with their students.

Table 7 : Summary of the Results of the Statistical Test of Relationship between the Teachers' Digital Proficiency as well as Self-Efficacy and the Learners' Academic Achievement

Variables	Learners' Academic Achievement		
	r	*p-value*	*Remarks*
Teachers' Digital Proficiency	.056	.486	Not Significant

Teachers' Self-Efficacy	-.045	.572	Not Significant

Legend: Significant if p-value < 0.05 *Ho is Rejected if Significant* *Ho is Accepted if Not Significant*

Table 7 presents a summary of the results of the statistical test of relationship between the teachers' level of Digital Proficiency as well as their level of Self-Efficacy and the learners' Academic Achievement. The data revealed that there is no significant relationship between the teacher-respondents' level of digital proficiency as well as their level of self-efficacy and the learners' academic achievement as reflected in the p-values that are higher than the level of significance which is 0.05. Hence, the null hypothesis is accepted. The result further implies that the teachers' digital proficiency and self-efficacy have no bearing to the learners' academic achievement in the core subjects, Mathematics, English, Science, and Filipino.

This result indicates that, in this study, a teacher's digital skills and confidence in their teaching abilities do not seem to directly influence student grades in core subjects. This is counterintuitive because it might be expected that teachers who are tech-savvy and believe in themselves to positively impact learning. However, it highlights that effective teaching is complex and relies on many factors beyond these two aspects.

Here is why this might be happening, firstly, digital proficiency focuses on technical skills – being good at using technology does not automatically make someone a good teacher. This is aligned with the study of Sailer et al. (2021) which argues that teachers need to be digitally proficient to meet the demands of a digital world, but it does not say that digital proficiency alone makes someone a good teacher. Pedagogical knowledge, or knowing how to teach effectively, is equally important. Secondly, even confident teachers may lack the specific lesson plans or strategies needed to boost learning in subjects like Math or Science. Finally, student achievement depends on a lot more than just the teacher – student motivation, home environment, and school resources all play major roles.

It is important to note that this study does not mean digital proficiency and self-efficacy are unimportant for teachers. Rather, it suggests that they are just parts of a much larger puzzle. More research is needed to understand how these factors interact with other elements of the teaching-learning process to impact academic outcomes in different ways.

This result aligned with the study by Özcan (2021) that academic achievement is affected by many things, including the family's education level, school's physical conditions, school management, the school environment, and the teachers.

In addition, the tests used to check digital proficiency and self-efficacy, along with the setting in which they are used, might change the link that was seen with academic success. Different aspects of digital proficiency, like technology skills, understanding about how to teach, and content expertise, may have different effects on how well students do in school. In the same way, opinions about one's own abilities may be different in different areas and teaching situations.

In today's technologically driven era, the non-alignment between teachers' digital proficiency and students' academic achievement suggests a need for comprehensive understanding of the role of technology in the learning process (Pate, 2019). It invites scrutiny into whether the conventional measures of digital proficiency capture the intricacies of effective technology integration or if additional dimensions need consideration. Examining specific digital tools, platforms, or pedagogical approaches may reveal subtleties that influence the impact on student learning.

The study on the impacts of digital technologies by Miliou, Dimitriadis, Sobrino, Giannoutsou, Cachia, Mones and Loannou (2023) aligns with the discussion by questioning whether our usual ways of measuring teacher digital proficiency are enough. The study highlights that many factors beyond a teacher's technical skills influence how successful technology use will be in the classroom. It emphasizes the need to understand how technology affects various aspects of the learning process, along with the tools and teaching methods used. This mirrors the discussion's call for a deeper understanding of how technology impacts student learning, suggesting that simply measuring a teacher's basic digital skills might not provide a complete picture.

Moreover, considering the evolving landscape of educational technology, continuous professional development becomes a focal point. Investigating the correlation between teachers' ongoing digital training, adaptability to emerging technologies, and subsequent shifts in student academic outcomes could offer insights into the dynamic nature of this relationship (Koh et al. 2017). The exploration of longitudinal data tracking teachers' digital growth and its parallel impact on student achievement could provide a more comprehensive understanding.

Additionally, the absence of a significant relationship between teachers' self-efficacy and learners' academic achievement invites contemplation on the interconnected factors influencing educational outcomes according to Jerrim et al. (2023). Exploring potential mediators or moderators, such as classroom management strategies or student engagement practices, may unravel the intricate dynamics at play. Recognizing the interplay between various teacher attributes and instructional practices can inform targeted interventions to enhance student success.

The study on teacher social goals by Chang et al., aligns with the discussion by showing that the relationship between a teacher's self-beliefs and how students do in class is not simple. The study found that a teacher's own social goals (how they want to connect with students) influences their belief in their ability to engage students, which in turn affects how engaged students actually are. This highlights that many factors work together to shape student outcomes, supporting the discussion's call to look beyond simple connections between teacher self-efficacy and achievement in order to understand what helps students succeed.

Conclusions

Based on the findings of the study, it can be inferred that the teacher respondents are very confident on their digital proficiency in all aspects. Being the teachers of the computer age, teachers are generally adept and knowledgeable in most of the areas of technology. On the part of the learners, they have met the expectations as far as their academic achievement is concerned. The learners' performance in the subjects is an affirmation of the teachers' very high level of digital proficiency and self-efficacy. Hence, the higher is the teachers' proficiency and self-efficacy, the higher is the learners' academic achievement. However, the teachers' proficiency and self-efficacy have no significant bearing to the learners' success in their academics.

Recommendations

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

1. Teachers should actively enhance technological skills through workshops, focusing on areas needing improvement for more engaging lessons and a dynamic learning environment.
2. Teachers should enroll in courses to learn about maintaining online safety, ensuring a secure online learning space, and fostering open communication with students on safety concerns.
3. Teachers should enhance Math and Filipino teaching strategies with supplementary materials and interactive tools, creating a systematic plan for assessing student performance and adapting teaching methods for overall academic improvement.
4. School Heads should keep checking teachers' progress because given the lack of a clear connection between teachers' digital proficiency and self-efficacy and student achievement, ongoing monitoring and evaluation over time can help identify clear relationships that might emerge gradually, providing deeper insights into the teaching-learning process.

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