International Journal of Multidisciplinary and Current Educational Research (IJMCER)
ISSN: 2581-7027 ||Volume|| 7 ||Issue|| 3 ||Pages 260-290|2025||

Teachers' Readiness and the Integration of Technology in Teaching

Marian Serika B. Mane
A Master's Thesis presented to the Faculty of the Graduate School Pamantasan ng Cabuyao (University of Cabuyao) Cabuyao City, Laguna

ABSTRACT: This study explores the teachers' readiness and technology integration in the classroom. Investigating teaching practices, the frequency of technology use inside the classroom, confidence in integrating technological, content, and pedagogical knowledge, and technology's impact on learning outcomes. The study employed a quantitative descriptive correlational design, adopting the standardized survey questionnaire TPACK of Mishra and Koehler's (2006), anchoring the 4-point Likert Scale to analyze how ready teachers are from Dila Elementary School and Balibago Elementary School in the Division of Santa Rosa for the integration of technology inside the classroom. Data were analyzed using descriptive and inferential statistics. The findings of the study revealed that the 74 teachers involved in the survey showed strong pedagogical (m=3.500 – strongly agree) and content knowledge (m=3.3322 – strongly agree), where teachers feel slightly lower confidence in social studies with 3.28. The technological knowledge (m=3.1916 – agree) suggest that teachers rely more on traditional digital tools and less on interactive or student-centered tools like LMS and digital quizzes. Some express limited exposure to diverse digital tools, indicating the prospect for concentrated upskill and technology used in classrooms.

The findings also showed weak and non-significant relationships ($|r| < .20$, $p > .05$) for most variable pairs. The demographic factors, such as age, experience, and education, were not strongly correlated with content and pedagogical knowledge. Interestingly, most respondents showed that they were eager to learn and often used inexpensive devices in their lessons, like multimedia tools and interactive TV, to name a few.The study also found that professional development is crucial in strengthening teachers' technology integration skills. Teachers who had participated in focused training programs noted more confidence and increased technology usage in the classroom. However, teachers with longer years in teaching could also mean require more support in integrating newer technologies especially as professional development in digital tools may evolved over time. Disparities in training quality and accessibility to digital resources were noted as persistent issues. In the end, this study offers valuable insights for educators, school leaders, and policymakers seeking to empower teachers in creating dynamic, tech-enhanced learning environments. By supporting continuous professional development and fostering a culture of innovation, schools can ensure that technology can improve student learning outcomes.

KEYWORDS: teacher readiness, TPACK, technology integration, educational technology, professional development, student engagement

I. THE PROBLEM AND ITS SETTING

INTRODUCTION: Modern teaching and learning now revolve much around integrating educational technologies into classrooms. Teachers were expected to adjust to these changes and successfully integrate digital technologies into their classrooms as the world quickly shifts digitally, especially during the pandemic, when all needed technology to cater to education and incorporate digital tools effectively into their pedagogy, similar to what the last DepEd Secretary had done. Briones and other education ministers from Southeast Asia stated that education should continue (DepEd, 2020). Technology changes quickly, which has caused a significant shift in education that has changed how students learn and how teachers work with them (Joseph et al., 2021). However, teachers' access to professional development opportunities is crucial in managing this change successfully (Hennessy, D'Angelo, McIntyre, & Koomar, 2022). How well educational technology integration works in classrooms is directly linked to how well teachers are trained to understand and use the tools. Because of this, professional development is significant for ensuring that teachers have the skills, information, and confidence they need to use technology in enhancing student learning. Educational technology's role in helping students develop their critical thinking, teamwork, and problem-solving skills has become more apparent in light of the recent push for students to demonstrate proficiency in 21st-century

Competencies. Technology in the classroom could boost student involvement. It shows that using technology well in the classroom makes students more interested, helps them understand the material better, and makes it easier for them to work with their peers (Kimmons, Graham, & West, 2020). However, using technology in the classroom has certain disadvantages as well. (Backfisch, Lachner, Sturmer, & Scheiter, 2021). There are problems that many teachers must deal with, like not enough training or having positive attitudes toward the use of technology in the classroom, and the lack of utilization of it is still a concern. These obstacles frequently keep technology from reaching its full potential in learning environments. As such, professional development program designs must address these challenges and provide teachers with continuous and relevant learning experiences to help them integrate technology seamlessly into their teaching practices (Sancar, Atal, & Deryakulu, 2021).

Despite its recognition, there is still a gap in understanding the specific factors that contribute to successful technology adoption (Cattaneo, Antonietti, & Rauseo, 2022). Quality professional development projects improve instructors' technical skills and encourage lifetime learning and flexibility in the always-evolving environment of educational technologies, where new tools and platforms develop routinely (Fernandez-Batanero, 2022). Professional development programs differ significantly in content, duration, delivery methods, and follow-up support. Some programs only teach technical skills, while others emphasize educational approaches to using technology. The level to which these programs comply with the needs of educators and the technology or devices that they are required to use in the classroom frequently determines their effectiveness. Teachers with a positive view toward technology and a growth mindset are more likely to gain insights from professional development programs and apply what they learn in the classroom. This study aims to measure how prepared teachers are to successfully incorporate technology into their teaching strategies. It looks at the variables that affect their readiness, such as their technological knowledge, pedagogical knowledge, content knowledge, and resource availability, and how these affect the degree and skills of technology integration in the classroom. The objective is to target areas needing assistance and improvement, offering knowledge through professional development, which can guide and boost the use of technology in the classrooms of Dila Elementary School and Balibago Elementary School in Sta. Rosa City, Laguna. By looking into various factors that contribute more successful technological integration, ranging from individual teacher characteristics to institutional support and the nature of professional development programs, this research offers valuable insights to change the view of educators, policymakers, and school leaders. The findings will help inform the design of more effective professional development initiatives, ensuring that teachers are well-prepared to integrate educational technologies in classrooms and meet modern education's challenges, and leverage technology to enhance student learning and engagement.

THEORETICAL FRAMEWORK: The study adopted the Technological Pedagogical Content Knowledge (TPACK) framework theory that evaluates teachers' professional growth and classroom technology use.

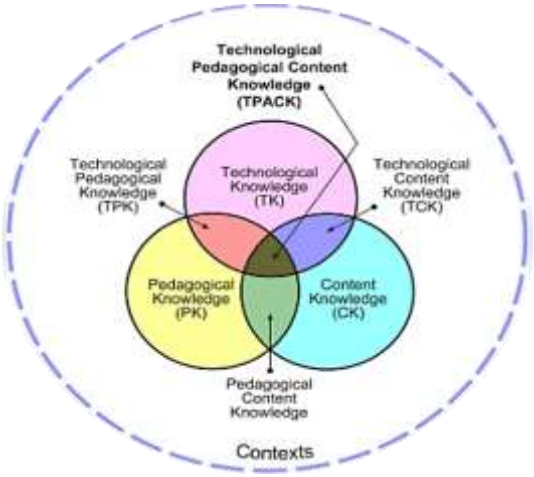

Figure 1: The components of the TPACK framework (graphic from http:// tpack.org).

TPACK, created by Mishra and Koehler in 2006, emphasizes the importance of three types of knowledge: technological knowledge (TK), educational knowledge (PK), and content knowledge (CK). TPACK helps teachers align technology with their teaching style and subject matter, fostering deeper student engagement and improving educational outcomes. The TPACK model builds upon Shulman's (1986) concept of Pedagogical Content Knowledge (PCK) by adding Technological Knowledge (TK) as a core component necessary for teaching technology. It suggests that integrating technology into teaching involves understanding how technology interacts with pedagogical strategies and subject matter. This study aims to determine teachers' readiness to integrate technology into their teaching practices and the extent to which TPACK-aligned professional development programs support teachers' use of technology in the classroom.

CONCEPTUAL FRAMEWORK: The study makes use of IV-DV model to analyze and understand the flow of the research as illustrated in figure 2.

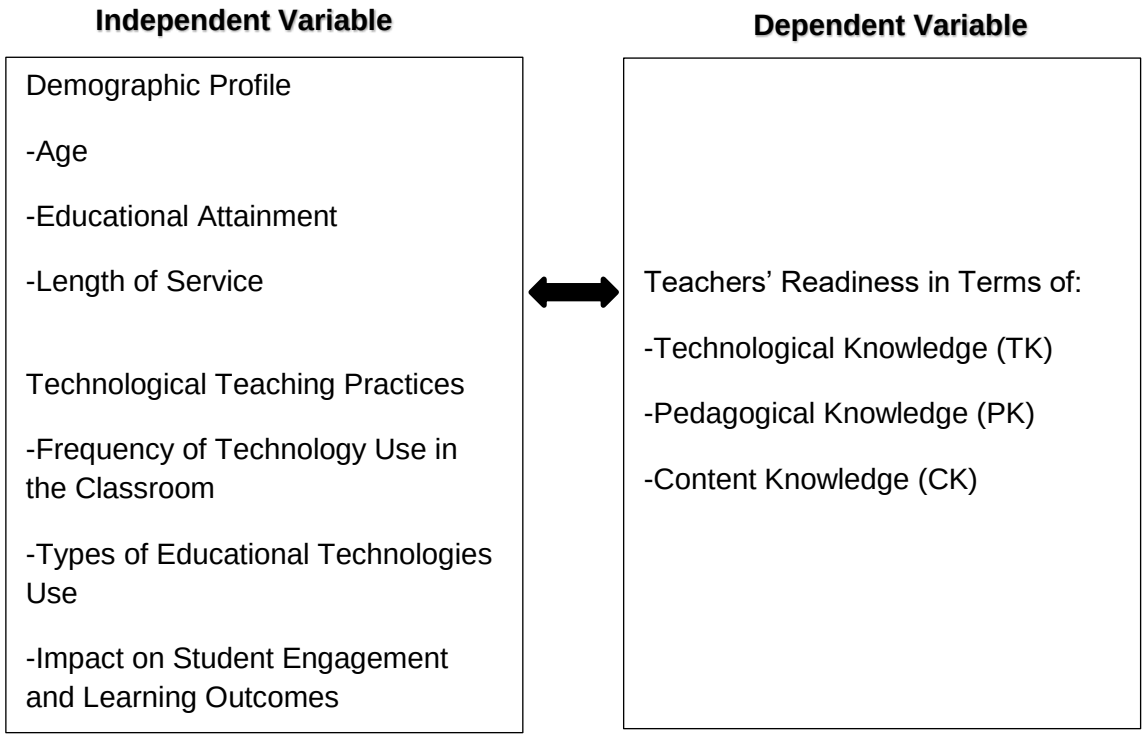

Figure 2. Conceptual Framework of the study

RESEARCH PARADIGM : This shows how teachers demographic and readiness in utilization of technology enhanced understanding, select the appropriate technological tools to align with both pedagogical goals and content requirements and adjust teaching practices to facilitate a technology- enhanced learning environment that supports students' engagement as the independent variable and the dependent variable as the primary outcome of the study such as the teachers' readiness in the integration of technology and their practices related to technology use. Findings from this research will guide the development of professional development programs to support teachers' readiness for integrating technology into the classroom.

RESEARCH QUESTIONS : This research aims to examine teachers' readiness on technological pedagogical content knowledge (TPACK) d the integration of technology.

Specifically, the study seeks to answer the following questions:

1. What is the demographic profile of the respondents in terms of:
    1.1. Age

1.2. Educational attainment
1.3. Length of service

2. What is the level of teachers' readiness based on TPACK in terms of:
2.1. Technological Knowledge (TK)
2.2. Pedagogical Knowledge (PK)
2.3. Content Knowledge (CK)
3. To what extent have teachers integrated educational technologies into their teaching practices in terms of:
3.1. Frequency of technology use in the classroom,
3.2. Types of educational technologies used,
3.3. Impact on student engagement and learning outcomes
4. Is there a significant relationship between the level of teachers' readiness based on TPACK when grouped according to profile in terms of:
4.1. Technological Knowledge (TK)
4.2. Pedagogical Knowledge (PK)
4.3. Content Knowledge (CK)
5. Is there a significant relationship between the teachers' integration of educational technologies into their teaching practices in terms of:
5.1. Frequency of technology use in the classroom,
5.2. Types of educational technologies used,
5.3. Impact on student engagement and learning outcomes
6. Based on the results of the study, what professional development program can be proposed?

HYPOTHESIS

The researcher was guided by the hypothesis below:

HO1: There is no significant difference between the teacher's readiness in integrating technology in teaching based on their profile.

HO2: There is a significant positive correlation between the teacher's readiness in integrating technology in teaching based on their profile.

SCOPE AND LIMITATIONS: This study focuses on teachers' readiness for integrating educational technologies in classroom settings. It involved two public elementary schools (Dila Elementary School and

Balibago Elementary School) in the City of Santa Rosa. Employing quantitative research, this study sought to assess and analyze the measurable aspects of teachers' level of readiness based on TPACK and the educational technologies used in their teaching practices.The study was limited to the relationship between teachers' readiness in terms of: Technological Knowledge (TK), Pedagogical Knowledge (PK), and Content Knowledge (CK) for effective technology integration in teaching from teachers of kindergarten to grade 6 from Dila Elementary School and Balibago Elementary School in Sta. Rosa City, Laguna, during the academic year 2024-2025. Future studies could address these limitations using a larger group of participants, longitudinal studies, and qualitative views to understand the results better.

SIGNIFICANCE OF THE STUDY : The researcher believed that the findings of this study would benefit the members of the academe, the community, and other researchers.

Curriculum Developers. The study will benefit curriculum developers by helping them better integrate educational technologies into lesson plans.

Educational Policy Makers. Policymakers can utilize the findings to push for funding, resources, and laws to enhance the emphasis on instructional technology within teacher development frameworks.

Future Researchers. This study will also be helpful to future researchers since it lays the groundwork for more investigation into the connection between technology integration and professional development.

Parents. Parents will benefit indirectly from the study by improving their children's learning experiences.

Professional Development Providers. Organizations that create and provide professional development programs will get insights from the study regarding the demands and obstacles instructors encounter in technology integration. This enables providers to customize their training programs to focus on the most pertinent skills, technologies, and pedagogical methods required in contemporary classrooms, thereby developing more effective, practical, and accessible programs for educators.

School Administrators. The study will benefit school administrators by helping them gain a clearer understanding of the gaps and successes in their current professional development initiatives. Administrators will also be able to identify which institutional policies and resource allocations need adjustment to foster a more technology-friendly environment in schools.

Students. Students are, all things considered, major beneficiaries of this work. Students will have more dynamic, interesting, and individualized learning experiences as teachers grow proficient in using technology. Knowledge of efficient classroom technology can enhance every student's academic performance and learning opportunities.

Teachers. The study's main audience is teachers because it will provide them with useful information that can help them use educational technology in their lessons.

DEFINITION OF TERMS: The following terms are defined for a better and common understanding of the study.

Classroom Environment. The classroom environment refers to the physical and psychological conditions in teaching and learning. May include the arrangement of technology in the classroom, the level of interactivity between students and teachers, and the overall atmosphere that promotes or hinders the use of digital tools in teaching. The classroom environment is a key factor in determining the success of technology integration.

Digital Literacy. The skill of individuals, including educators and learners, to effectively utilize digital technology for information creation, evaluation, and navigation. Maximizing the use of technology in the classroom, as well as making wise choices about which platforms and tools to use.

Educational Technology is when digital tools, platforms, and devices are used to help teach and learn. These include online resources (digital material and interactive platforms), software (learning management systems (LMS) and educational apps), and hardware or gadgets (PCs, tablets, cellphones, and smartboards).

Instructional Technology. In this study, instructional technology encompasses devices like computers, projectors, tablets, and educational software that facilitate teaching and learning.

Pedagogical Practices are the techniques and approaches teachers utilize to teach and facilitate learning. In the context of this study, the way teachers modify their teaching strategies to integrate educational technologies is considered a pedagogical practice.

Professional Development. The continual instruction and training instructors undergo to improve their knowledge, abilities, and methods of instruction.

Student Engagement. In a classroom set up, students engagement is defined as the level of interest, involvement, and attention learners pay during the learning process. The study examines how teachers' integrating educational technologies, influenced by their professional development, affects student engagement. Engaging students through technology may include interactive lessons, digital collaboration tools, or personalized learning experiences. This term is crucial in understanding the effectiveness of technology used in enhancing learning outcomes.

Technology Integration. Actively integrating technology into teaching and learning enhances educational experience.

II. REVIEW OF RELATED LITERTATURE AND STUDIES

This chapter will provide the related literature and studies that are valuable in this study.

CONCEPTUAL LITERATURE

Teachers' Readiness Based on TPACK Components: The effective integration of technology in education is no longer optional, and it is crucial for preparing students for a rapidly changing digital world. However, the success of technology-enhanced learning depends significantly on teachers' readiness, their Technological Knowledge (TK), Pedagogical Knowledge (PK), content knowledge (CK), the TPACK framework model for assessing teachers' preparedness in technology integration, and the support from the institution. Integrating new technology tools often requires a period of trial and error, lesson redesign, and troubleshooting, all of which demand time. Research shows that teachers who lack confidence in their technological skills are less likely to experiment with new tools, preferring to stick to traditional methods they are more comfortable with (Dele-Ajayi, Fasae, & Okoli, 2021). Teachers' lack of confidence in employing technology is another challenge. The rapid pace of technological development can overwhelm many teachers, especially those who have worked in the field for years. (Chand, Deshmukh, & Shukla, 2020).To address these, Follow-up coaching, ongoing professional support through communities of practice, and learning tools can provide persistent assistance. Teachers can integrate technology more effortlessly and successfully into educational strategies by reviewing concepts, troubleshooting problems, and reflecting on their practices (Seufert, Guggemos, & Sailer, 2021).

Despite teachers' positive attitudes toward the use of technology in the classroom, the lack of utilization of it is still an issue of concern (Nueva, 2019). As a result, teachers may be hesitant to incorporate technology into their lessons as much as they would like. Resistance to change is a common issue when it comes to technology integration. While some educators are enthusiastic about incorporating digital tools into their teaching, others may view technology as unnecessary or disruptive, particularly in traditional subject areas (Wilson, Ritzhaupt, & Cheng, 2020).

Teachers must also adapt their pedagogical approaches to integrate digital tools into teaching effectively. Teachers who align pedagogical strategies with technological applications are more likely to deliver effective, technology-enhanced instruction (Torchia, 2023b). Beyond technological and pedagogical competencies, teachers must maintain strong content knowledge and ensure that technology enhances rather than replaces curriculum delivery. Digital tools should help achieve a deeper understanding of subject matter (EdTech Books, n.d.).

Integration of Educational Technologies into Teaching Practices

Frequency of Technology Use : Time constraints, lack of digital resources, and insufficient professional support often limit teachers' classroom technology use frequency (Hebert & Jenson, 2021). Teachers may feel they are on their own when technical problems occur, which may erode their confidence in using technology (Kamble, Gauba, Desai, & Golhar, 2021). These challenges are more pronounced in schools with limited technological infrastructure.

Types of Educational Technologies Used : The type of technologies employed is influenced mainly by resource availability. Teachers in well-equipped schools use a wider range of technologies, while those in under-resourced schools rely on outdated or limited tools (Seifu, 2020). Furthermore, budget constraints prevent many institutions from upgrading outdated technologies, which may not support the latest software or applications needed for innovative classroom activities. Teachers in such schools face significant challenges in incorporating technology into their teaching, as the lack of essential equipment renders even the best professional development training on technology integration ineffective (Haegele, Wilson, & Zhu, 2021).

Impact on Student Engagement and Learning Outcomes: Although learning theories have been debated for centuries, scientists, psychologists, and teachers still have very different ideas about how people learn today. Several learning theories influencing contemporary debates on technology integration are behaviorism, cognitivism, constructivism, constructionism, and connectivism. These learning theories have very different ideas about the learner, how the learner interacts with others, and how the learner interacts with technology. Collaboration fosters a sense of community and shared responsibility among educators, allowing them to learn from one another's experiences and perspectives. Thoughtfully integrated learning significantly enhances student engagement, motivation, and academic outcomes (Obispo, 2023b). It can lead to a more equitable educational experience and give students the tools to succeed (Torchia, 2023b). This collective learning enhances individual teacher efficacy and contributes to a broader culture of innovation within schools, as

teachers feel empowered to share successes and challenges related to technology integration (Qureshi, Khan, Raza, Imran, & Ismail, 2021). In addition to having knowledge and comprehension of technology, Teachers who acknowledge how digital tools and resources may be used to achieve learning outcomes and modify their approach can employ digital teaching more effectively.

Relationship Between Demographic Profile and TPACK Readiness : Demographic factors such as age, educational background, and service length influence technological, pedagogical, and content knowledge development. Integrating new technology tools often require trial and error, lesson redesign, and troubleshooting, all of which demand time. Teachers' lack of confidence in employing technology is another challenge. The rapid pace of technological development can overwhelm many teachers, especially those who have worked in the field for years. (Chand, Deshmukh, & Shukla, 2020). Integrating technology may seem intimidating for these teachers, especially if they are uncomfortable with digital tools or feel they lack technical expertise to troubleshoot problems. Research shows that teachers who lack confidence in their technological skills are less likely to experiment with new tools, preferring to stick to traditional methods they are more comfortable with (Dele-Ajayi, Fasae, & Okoli, 2021). Teachers who have been doing their jobs for years or decades may not want to change how they do things, especially if they think their current techniques work. Some teachers do not fully embrace technology because they think it makes teaching harder instead of easier (Raygan & Moradkhani, 2022).

Relationship Between Teachers' Readiness and Integration Practices : Teachers' technological readiness strongly correlates with their actual use of technology in the classroom. Without readily accessible support, the potential benefits of educational technologies are often left untapped, particularly in schools where teachers are already under pressure to meet curriculum goals. Leadership and support within an organization can be a great help. Teachers are shown that technology is integral to modern education when school officials put resources on infrastructure, professional development, and technical support alongside technology integration (Zander & Gustafsson, 2023). Educators often do not want to use technology because they fear it will take attention away from important learning goals, especially in more traditional topics. The presence of teachers' motivation and willingness to learn is more likely to integrate technology into their teaching, regardless of the challenges they may face. This motivation is often driven by a desire to enhance student learning, improve classroom engagement, or stay current with educational trends (Abel, Tondeur, & Sang, 2022). Schools that promote a supportive leadership culture, provide sustained professional development, and encourage collaborative learning environments see higher rates of successful technology integration (Christopoulos & Sprangers, 2021).

Development Programs for Technology Integration: Long-term, continuous professional development programs are crucial for effective technology integration. Research emphasizes that one-time workshops are insufficient; sustained, interactive, and context-relevant training leads to lasting change (Asfahani, El-Farra, & Iqbal, 2024).Professional development should focus on technical proficiency and emphasize how technology can enhance pedagogy and align content standards (Christopoulos & Sprangers, 2021). Furthermore, creating communities of practice, offering coaching support, and providing accessible learning resources enhance the likelihood that teachers will integrate technology effectively into their classrooms (Seufert, Guggemos, & Sailer, 2021). Although there are many difficulties in integrating technology in the classroom, these can be overcome with the help of encouraging leadership, continual professional development, teacher collaboration, and the establishment of an innovative culture. Schools can establish settings where technology is available and successfully incorporated into instructional strategies by overcoming obstacles relating to time, money, confidence, and opposition to change. Strong institutional support, driven educators, and successful student outcomes are examples of facilitators that can further improve the success of technology integration and, ultimately, give students more interesting and productive learning opportunities.

RESEARCH LITERATURE

Integration of Educational Technologies into Teaching Practices : Technology integration in classrooms is a vital part of modern education, but numerous barriers often impede its successful implementation. The integration of new technology tools often requires trial and error, lesson redesign, and troubleshooting, all of which demand time. Teachers' lack of confidence in employing technology is another challenge. Seifu (2020) highlights that schools, particularly those in underfunded areas, may not have the infrastructure or the necessary digital tools such as computers, tablets, or reliable internet access. Budget constraints prevent many institutions from upgrading outdated technologies, which may not support the latest software or applications needed for innovative classroom activities.

When teachers have opportunities to practice using technology in a supportive environment, they are more likely to incorporate it into their classrooms. Zulueta et al. (2021) imply that Filipino educators are skilled in integrating ICT into their lessons. They can create educational resources that enhance the effectiveness and efficiency of instruction delivery for students. Their technology integration practices make them more productive and efficient. Educators may guarantee that their lessons are delivered effectively by planning and utilizing the right teaching resources and techniques. Although teachers often struggle with technological incompetence, technology-integrated teaching strategies can enhance the quality of instruction (Obispo, 2023b). In these collaborative contexts, teachers can learn from one another and build upon each other's successes, which leads to better rates of technological adoption in schools. Lastly, teachers' and students' acceptance of technology can be greatly influenced by its successful application. Cabasan, R. A. (2024) found that, along with the need for better digital literacy, cybersecurity awareness, and teacher training, the findings point to other important areas of concern, such as internet connectivity, financial limitations, and access to digital devices. The findings highlight the need for all-encompassing support systems to encourage inclusive and progressive digital learning settings.

SYNTHESIS : Professional development is critical in equipping teachers with necessary skills and knowledge to integrate the effectiveness of the programs and significantly influences how well educators can leverage digital tools to enhance student learning and engagement. Research indicates that when professional development is thoughtfully designed, it can substantially improve teachers' technological proficiency and ability to implement technology-driven instructional strategies. Abulencia et al. (2022) study examines teachers' instructional technology competence in a high school in Candaba, Pampanga, Philippines. The results show that teachers have average Information and Communication Technology (ICT) competence, with high proficiency in MS Word, PowerPoint, Excel, and the Internet. However, they face challenges in using ICT in teaching. The study recommends training teachers on ICT to enhance their knowledge and skills and a long-term plan for ICT implementation. Encouraging and training teachers to integrate ICT into teaching is also recommended.The study of Obispo (2023c) showed that technology integration in the classroom is crucial in teaching strategies such as using basic creation, storage, and retrieval of teaching-learning resources and exploring educational websites for curriculum-relevant content. Technology-integrated instructional methods also improve the quality of instruction. This study explores professors from the University of Cabuyao's perceptions of technology integration in the classroom. The research also assesses university support regarding resources and professional development by investigating teaching strategies, computer technology experience, confidence in integration, and technology's impact on learning. The study establishes a significant relationship between educators' perceptions of integration and university support. The study recommends regular sessions to enhance ICT skills, address specific needs, and empower educators. However, the technological incompetence of teachers emerged as the most frequently reported challenge.

With an eye toward an action plan, the study of Robles (2023b) investigates teachers' opinions about technology integration in the classroom at the University of Cabuyao. Examining instructional approaches, computer technology experience, confidence in integration, and how technology shapes learning, the study evaluates university assistance regarding resources and professional growth for 79 pre-service math teachers. The results show significant agreement about technology integration and university support. The study finds a noteworthy correlation between teachers' opinions of university assistance and integration. Teachers underline via webinars and seminars the significance of continuous professional development.These studies claim that to meet requirements and empower educators, they suggest holding frequent workshops to improve educators' ICT abilities and skills. Research indicates that ongoing professional development, rather than one-time workshops, leads to greater retention and application of technology integration strategies. This sustained support can take various forms, such as follow-up coaching sessions, online communities of practice, and access to resources that encourage continuous learning. Providing teachers with opportunities to revisit concepts, troubleshoot challenges, and reflect on their practices creates an environment where technology can be integrated more seamlessly and effectively into instructional strategies. Studies indicate that ongoing professional development, as opposed to one-time training, enhances the use and ongoing utilization of technology integration techniques. Assessments of instructors' proficiency with technology, methods of education, and student results might yield important information. Coaching sessions, internet forums, and resources for ongoing education can all be used to offer support. Programs that are both culturally competent and take into consideration a variety of viewpoints appeal to educators and facilitate effective technology integration. Gaining insight into educators' cultural backgrounds can improve the efficacy of professional development by making it more relevant and suited to their environments. By analyzing these outcomes, educational institutions can refine their professional

development offerings, ensuring they align with teachers' needs and the demands of a rapidly changing educational landscape.

RESEARCH GAP/S : The efficacy of professional development programs for teachers with different degrees of technical competency represents a significant research gap. Few studies thoroughly investigate how tailored training affects teachers at varying levels of digital literacy, even though many stress the value of professional development in technology integration. When learning about technology, new and seasoned teachers have different requirements, yet much of the material in publications treats them as a single group. To ensure that both novice and seasoned educators are prepared to incorporate technology into their classrooms successfully, this study intends to investigate how tailored professional development could accommodate these various requirements. Another obvious difference is the lasting importance of technology integration following professional growth. Although many studies have looked at the immediate results of professional development programs, such as rapid improvements in teachers' technological skills or their first attempts at integrating digital tools, little research is targeted at the long-term retention and use of these skills. This study aims to close this gap in understanding by looking at not just the direct effects of professional development but also how continuous support, such as peer cooperation or follow-up training sessions, may sustain teachers' efforts in long-term technology integration

The third research need that comes out of the themes is the role that institutional support and school leadership play in fostering effective technology integration. Although leadership is frequently described as a facilitator, few studies explicitly examine the leadership behaviors that best facilitate technology integration. What types of guidelines and policies should school officials implement to foster a culture that encourages creativity and the use of technology in the classroom. Examining the direct and indirect effects of leadership on teachers' attitudes about technology and their readiness to try out new tools. Some studies have explored the benefits of peer collaboration in general. There is limited research on how structured, collaborative professional development initiatives designed around technology integration can impact teachers' practices. This study intends to fill these research gaps and offer an increased understanding of the elements that go into effective technology integration in various educational contexts.

III. RESEARCH METHODOLOGY

This chapter outlines the researcher's methodology and study-related procedures, such as data sources, study population, instrument collection, and statistical treatment.

RESEARCH DESIGN : The study employs a quantitative study to collect detailed information about Teachers' Readiness and Integration of Technology in Teaching. Adapting the TPACK assessment, which was created by Mishra and Koehler in 2006, emphasizes the importance of three types of knowledge: technological knowledge (TK), educational knowledge (PK), and content knowledge (CK). TPACK helps teachers align technology with their teaching practices and subject matter, measuring the correlation between the teacher's demographic profiles, fostering deeper student engagement, and improving educational outcomes through a survey/ questionnaire to gather data. Quantitative information was gathered to analyze the relationship between the respondents' readiness based on TPACK when grouped according to profile and frequency of technology use, and various technological tools, such as software, applications, and students' engagement when they integrate, and their perceived utilization practices of technology in teaching.

POPULATION AND SAMPLING TECHNIQUE: The population for this study consists of 74 teachers from Dila Elementary School and Balibago Elementary schools. The study used the stratified random sampling technique, which ensures that subgroups within the population—such as teachers age, educational attainment and length of service. This technique allows for a more accurate reflection of the population, ensuring that insights drawn from the sample can be generalized to the broader teaching community. The inclusion, the criteria for respondents are teachers who have undergone at least one formal professional development program focused on technology integration in the last two years, as this ensures that they have recent experience in the subject matter. To provide a range of perspectives teachers from kindergarten to grade 6 levels were to participate in how technology is used across grade levels. This careful selection process ensures the study to gather relevant and meaningful data from the target population. Table A shows the elementary public school teachers with a total of 74 respondents from Dila Elementary School (41) and Balibago Elementary School (33) of Sta. Rosa, Laguna. Following the directive of DepEd memo on no disruptions of classes and ethical

considerations, only 90 elementary teachers from both public schools were listed to participate. Using the Raosoft sample size calculator the recommended sample size was 74, which the researcher was able to pull through despite the busy schedule of the teachers.

The sample size n and margin of error E are given by:

$$x = Z(^{c}/_{100})^{2}r(100-r)$$

$$n = {}^{N\,x}/_{((N-1)E^{2}\,+\,x)}$$

$$E = \mathrm{Sqrt}[{}^{(N\,-\,n)x}/_{n(N-1)}]$$

Table A. Respondents of the Study

Elementary Public School Teachers from selected schools in Santa Rosa City

DepEd emphasizes the importance of using technology inside the classroom. The researcher believes that elementary education is the foundation of the learner's future academic success, social skills, and emotional intelligence. The study's results cannot only make 21st-century learners adaptive at an early stage but also improve teachers' technological skills in adapting to the pedagogical needs of learners.

INSTRUMENT : The survey questionnaire for this study was designed to collect quantitative data on teachers' readiness and technology integration in teaching. The questionnaire was adopted from the TPACK model created by Mishra and Koehler in 2006 and modified some categories pertaining to the frequency of use and students' learning outcome as part three, and the demographic profile of respondents, which allows a deeper analysis in terms of relating it to respondents' technology integration.Technological Knowledge (TK), Educational Knowledge (PK), and Content Knowledge (CK) that helps educators reflect on how they integrate and implement technological and pedagogical practices inside the classroom as the third part. To evaluate participant replies, the study used a standard survey questionnaire using a four-point Likert scale which ranged from "Strongly Agree" (SA) with a value of 4 to "Agree" (A) with a value of 3, "Disagree" (D) with a value of 2, and "Strongly Disagree" (SD) with a value of 1.

DATA GATHERING PROCEDURE : The data needed were gathered through questionnaires adapted from the TPACK assessment tool by Mishra and Koehler in 2006. A letter of request was given to the principals of Dila Elementary School and Balibago Elementary School in Sta. Rosa, Laguna, with authorization from the Division Office to conduct the study. Before distribution, following the

The DepEd no-disruption policy, which is the key teachers from each grade level, guides and helps the researcher disseminate instructions for successfully distributing and collecting the questionnaire. Respondents are given a specified time frame to complete and return the surveys within one week. To ensure sufficient response rates, the sample size is achieved, which is critical for the reliability and generalizability of the findings. The survey responses will be automatically compiled during this phase; responses will be monitored to identify any discrepancies or missing data.

Once all the responses are collected, the final step involves organizing and preparing the data for analysis. Data cleaning procedures will be applied to ensure all the information collected is complete and accurate. This will involve checking for any outliers, incomplete responses, or errors in the entries. Incomplete or invalid responses may be excluded from the analysis if they do not meet the study's criteria. After this, the data will be encoded into statistical software, such as SPSS or Microsoft Excel, and analyzed using descriptive and inferential statistical techniques. The quantitative data gathered will provide insights into the relationship between professional development and technological integration and demographic factors influencing these trends.

ETHICAL CONSIDERATIONS: Ethical considerations are paramount in conducting research, and incorporating the Data Protection Act 2012 (DPA, 2012) into this study is essential for safeguarding personal data, particularly when human subjects are involved. Researchers must adhere to these principles to conduct responsible and ethical research,

Respondents	**Total**
Dila Elementary	41
Balibago Elementary	33
Total	**74**

Contributing valuable insights while safeguarding participant welfare. To align ethical principles in this study, informed consent will be freely given from all participants before their involvement, ensuring they fully understand and are informed of the purpose of the research, the procedures involved, how their data will be used ensuring transparency in data handling and their right to withdraw at any time without any repercussions. Participants will be assured that their responses will be treated

Confidentially and anonymously, with no identifiable information linked to their data. This confidentiality extends to both the survey and interview components of the study, where data will be securely stored and only accessible to the research team. Participants will also be informed about how the findings will be used, ensuring transparency and that they will be processed lawfully and fairly, and ensuring that data is anonymized where possible to protect participants' identity.

Furthermore, the study will seek approval from an institutional review board or ethics committee to confirm that all ethical standards are met. This oversight ensures that the research is conducted responsibly, prioritizing the rights and welfare of participants while contributing valuable knowledge to the field.

STATISTICAL TREATMENT OF DATA

The study used various statistical tools to analyze the survey data collected from teachers.

1. Descriptive Statistics: This tool helps reveal the data trends and patterns, such as the strong correlation between demographic profiles, such as the age of the respondents, and variables such as the integration of technology inside the classroom.

2. Mean was used to determine the level of manifestation of teachers' readiness in integrating technology.

The 4-Point Likert Scale

Weight	Numerical Description	Verbal Description
4	3.500 - 4.000	Strongly Agree
3	2.500 - 3.499	Agree
2	1.500 - 2.499	Disagree
1	0.000 - 1.499	Strongly Disagree

3. Inferential analysis: Techniques such as ANOVA were employed to determine whether there are any statistically significant differences between means. In this case, the age of the respondents

4. Correlation Analysis: The tool showed consistently non-significant relationships ($|r| < .20$, $p > .05$) for most variable pairs. This statement states that demographic factors such as age, experience, and education were not strongly correlated with technological readiness or content and pedagogical knowledge.

5. Chi-Square Tests: helped identify which demographic variables were statistically linked to technological, pedagogical, and content knowledge readiness.

IV. PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter presents, analyzes, and interprets the data gathered in the study. This research examines teachers' readiness for technological pedagogical content knowledge (TPACK) and technology integration.

Specifically, the study seeks to answer the following questions:

1. What is the demographic profile of the respondents in terms of?

1.1: Age The demographic profile of the respondents as shown in Table 1 that was based on age reveals insightful trends that speak to the generational dynamics within the teaching population. With 74 respondents, the distribution is quite telling, especially when viewed in the context of readiness and openness toward integrating technology in teaching. The age group with the highest representation is the "46 and above" category, comprising 29 individuals or 39.2% of the sample. This indicates that a substantial portion of the respondents are veteran teachers who are likely to have extensive experience in the educational field. While such experience can translate into pedagogical expertise, it also raises questions about their adaptability and familiarity with rapidly evolving technological tools, considering they may not have been exposed to digital platforms during their early professional development years. The second most represented age group is those between 31 and 35 years old, with 15 respondents making up 20.3% of the sample. This group may represent mid-career teachers who have already established some familiarity with technology, especially given the gradual integration of digital tools in education over the past decade. Their age places them in a potentially pivotal position—they are experienced enough to understand the dynamics of traditional classroom instruction but still young enough to be flexible and adaptable to innovations. These teachers are possibly the bridge between the older, more traditional educators and the younger, more tech-savvy newcomers.

Interestingly, the 25–30-year-old group, which might typically be assumed to be the most technologically fluent given their millennial or Gen Z background, represents only 13.5% of the respondents. This could suggest a relatively low influx of new teachers in the sample population or a limited number of recent graduates entering the teaching profession within the surveyed area. This group might also represent teachers still building their pedagogical confidence and professional identity. However, their age could give them an edge when integrating and experimenting with modern instructional technologies. The age bracket of 41–45 makes up 14.9% of the respondents, suggesting a group potentially in the maturity phase of their careers.

At this stage, teachers may possess a wealth of classroom management strategies and a well-honed teaching philosophy, yet their adaptability to technology could vary widely. Some within this group may have proactively embraced tech-based teaching solutions out of necessity or curiosity. In contrast, others might remain cautious or even resistant due to comfort with traditional methods. Institutional support, professional development opportunities, and personal attitudes toward change heavily influence their readiness for tech integration.Following that, the 36–40-year-old group is represented by nine respondents, or 12.2% of the total sample. This segment may share similar professional characteristics with the 41–45 age group but is likely to have had slightly more exposure to early digital innovations in education. Their experiences might include the introduction of interactive whiteboards, online grading systems, and the early stages of blended learning models. As such, they might possess a hybrid skillset that blends traditional and digital approaches, potentially positioning them as key stakeholders in the transition toward more technology-integrated classrooms.

The dominance of older age groups, particularly those aged 46 and above, may suggest certain challenges in technology integration initiatives. While experience is invaluable, it does not always translate to technological fluency or comfort with digital pedagogies. Many of these veteran educators may have had limited opportunities for structured ICT training during their formative years as teachers, which could affect their confidence in implementing technology-driven lessons. Moreover, their professional development priorities differ from younger educators, potentially creating a need for more personalized or differentiated training programs.The results of the study are in line with what Garzón-Artacho et al. (2021) found. They said that older teachers tend to utilize digital tools less often and say they are less confident in their digital skills. On the other hand, younger teachers, who are a smaller part of the current sample, are more comfortable and adaptable with educational technology. The study implies that professional development programs may be better if they were made to fit the different degrees of technological knowledge that instructors have, especially when it comes to age and years of teaching experience.

Table 1

Frequency and Percentage Distribution in Terms of Type of Age

Age	Frequency	Percentage
25-30 YEARS OLD	10	13.5
31-35 YEARS OLD	15	20.3
36-40 YEARS OLD	9	12.2
41-45 YEARS OLD	11	14.9
46 YEARS OLD and ABOVE	29	39.2
Total	**74**	**100.00**

Educational attainment: Table 2 reveals a significant proportion suggests that most educators in this sample have completed the minimum qualification required to practice professionally in teaching. Many respondents hold a bachelor's degree with a frequency of 47 with 63%, indicates a foundational readiness to engage with professional tasks, including integrating technology into classroom teaching. However, it also reflects potential limitations, given that higher educational qualifications often correlate with enhanced readiness for integrating advanced technologies in educational contexts. Therefore, most people with bachelor's degrees suggest a basic rather than advanced theoretical preparation for modern educational technology integration.Teachers with Master's Degrees typically have expanded their theoretical understanding, pedagogical knowledge, and often engage with current educational research trends, including technology integration. These educators are more likely to demonstrate readiness in adopting innovative instructional approaches, leveraging technology effectively to improve learning outcomes. Thus, this sizeable segment of Master's Degree holders can significantly impact technological integration's overall readiness and effectiveness within the school or educational context under study.

Only 1.4% hold Doctoral degrees. While numerically limited, the presence of teachers with doctoral degrees within this sample is nonetheless noteworthy. Doctorate holders typically have extensive research experience and are adept at exploring and integrating contemporary educational trends, theories, and practices. This level of expertise can contribute to developing or influencing institutional policies regarding technology integration. Despite their minimal numerical presence, doctorate-qualified educators often assume influential roles as educational leaders, mentors, or advocates who drive institutional readiness and innovation. Hence, even a minimal presence of doctorate holders can positively affect the broader institutional capacity for technology adoption and integration.

The distribution indicates that advanced educational qualifications beyond a bachelor's degree remain limited within the group. This limitation might reflect underlying structural issues, including limited access to higher education opportunities or insufficient professional incentives encouraging teachers to pursue advanced degrees. With only approximately one-third of teachers holding a Master's degree and a negligible percentage with doctorates, schools or institutions might encounter challenges in fully realizing their goals related to advanced technology integration in education. Consequently, strategic interventions may become necessary for institutional improvement, such as incentivizing higher education or professional training targeting technological integration. Finally, reflecting holistically on the presented data, the varied distribution across educational attainment levels highlights strengths and gaps within the existing teaching workforce regarding readiness for technology integration. While the substantial bachelor's degree majority indicates a strong foundational level, the smaller but crucially important proportion of Master's and doctoral holders reveals opportunities for leadership, mentorship, and advanced pedagogical and technological expertise. Educational leaders and policymakers should recognize and strategically address these findings to foster robust technological integration

in teaching, ultimately enhancing educational outcomes and promoting continual professional growth among teachers.

Table 2

Frequency and Percentage Distribution in Terms of Type of Educational Attainment

INDICATOR	Frequency	Percentage
BACHELOR'S DEGREE	47	63.5
MASTER'S DEGREE	26	35.1
DOCTORATE	1	1.4
Total	**74**	**100.00**

Length of service : Table 3 suggests that many teachers are in the early to mid-stages of their careers, likely having completed their initial induction and professional socialization into the teaching world. This group may have a solid foundational grasp of traditional and emerging teaching strategies. It might be at a stage where their confidence and enthusiasm are peaking, making them strong candidates for effective technology integration if provided with the right training and resources. It also indicates a substantial number of seasoned teachers who have spent a significant portion of their lives in the education system. This group likely holds institutional memory, leadership roles, and long-standing teaching philosophies rooted in experience. Various factors may influence their readiness for technology integration. While some may exhibit hesitancy due to comfort with traditional methods, others may have adapted over time, especially if they have participated in long-term professional development. Regardless, their depth of pedagogical expertise can be a critical asset in integrating technology in meaningful and effective ways if supported with ongoing and accessible training.

The group with 11–15 years of experience, comprising 12 individuals or 16.2%, is also noteworthy. These teachers fall squarely into the mid-career range and may represent a transitional cohort. They have had enough time in the field to develop a rich toolbox of instructional strategies and likely experienced firsthand the educational technology shifts over the past decade, including the move toward blended and online learning. Their position in the service spectrum suggests they may be both experienced and open to change, likely having been exposed to at least some degree of tech integration in professional development, curriculum design, or personal initiative. Their readiness might hinge on institutional encouragement and the availability of tech resources. The 0–4 years group is the smallest, comprising only 10 respondents or 13.5% of the sample. Despite their limited teaching experience, this group may have a strong edge in technological readiness, having recently graduated from teacher education programs that likely included training in educational technology. They may also be more digitally native than their older counterparts, with comfort using various online tools, platforms, and resources. However, their limited classroom management and instructional experience could influence how confidently they incorporate technology into real-world teaching contexts.

Thus, while their tech fluency might be high, their overall readiness could benefit from mentorship and ongoing practice in applying these tools pedagogically.The distribution of length of service among respondents suggests a balanced mix of early-career, mid-career, and veteran teachers, with a slight lean toward those in the 5–10 year and 16+ year brackets. This balance is crucial for fostering a dynamic and collaborative teaching community in which varying levels of experience can be shared. Younger teachers can bring fresh perspectives on emerging technologies, while older teachers can provide guidance on instructional strategies and classroom management. When harnessed effectively, this mix has the potential to foster a culture of mutual learning and mentorship that enhances the overall readiness of the teaching body. It is also important to recognize that length of service does not necessarily predict a teacher's technological competence or willingness to integrate new tools into their instruction. Teachers with fewer years of service may be more technologically agile but less seasoned in classroom application. In contrast, those with extensive service may have a deeper understanding of pedagogy but potentially more resistance to adopting new technologies.

Thus, assessing tech integration readiness should consider qualitative and quantitative factors, including attitudes toward change, prior exposure to training, and institutional support. The largest group of teachers is in the 5–10 year range, and they represent a particularly strategic target for capacity-building initiatives. These teachers may already be in a professional rhythm, have accumulated enough practical experience, and are still young enough to adapt quickly to new tools and methodologies. With proper encouragement and access to professional development, this cohort can be a powerful force for sustaining long-term technological transformation in the educational system. Their influence might also extend to mentoring newer teachers and modeling tech usage for more senior colleagues. The significant proportion of veteran teachers (16+ years) in the respondent pool underscores the importance of including this group in tech integration efforts. Often, these teachers are leaders in their departments or schools and key in shaping school culture. If excluded or underserved by professional development, their resistance could hinder system-wide adoption of educational technologies. Conversely, if empowered through supportive, non-intimidating tech training tailored to their needs, they could act as digital transformation champions, bringing wisdom and innovation to the classroom.The length of service may also influence the types of technology teachers are comfortable using. For instance, newer teachers may be more adept at using apps, social media, or online collaboration tools. Similar findings to Jiménez-Hernández et al. (2020), where younger educators tend to be more comfortable and proficient with digital tools, likely due to greater exposure and training in technology-rich environments. In contrast, more experienced teachers may be more comfortable with interactive whiteboards, PowerPoint, or basic learning management systems. Understanding these preferences is essential for tailoring tech-integration strategies that meet teachers where they are rather than imposing one-size-fits-all approaches.

Finally, this distribution of teaching experience illustrates the importance of a tiered, differentiated approach to professional development and capacity-building in educational technology. Programs should be strategically designed to cater to each group's strengths and needs: immersive tech workshops for the newer teachers, pedagogical integration strategies for mid-career teachers, and scaffolded, confidence-building sessions for veteran educators. In doing so, schools can build a technologically competent and confident teaching workforce, ready to embrace innovation while maintaining the core values and principles of effective teaching. Nueva's (2019) study findings indicate that younger educators better understand technology integration than their counterparts (Cavas et al., 2009). However, it was contrasted in another study by Mustafina (2016), where findings revealed that there was no effect and no significant difference between the age groups (22–30, 31–40, 41–50, and 51 and above) in terms of teachers' attitudes towards technology integration. More studies conducted by Semerci and Aydin (2018) revealed no significant difference between teachers' ICT use regarding their teaching experience or length of service.

Table 3
Frequency and Percentage Distribution in Terms of Type of Length of Service

INDICATOR	Frequency	Percentage
0-4 YEARS	10	13.5
5-10 YEARS	26	35.1
11-15 YEARS	12	16.2
16 AND ABOVE	25	33.8
Total	**74**	**100.00**

2. What is the level of teachers' readiness based on TPACK in terms of:

2.1 Technological Knowledge (TK) : The findings presented in table 4 reveal valuable insights into the teachers' technological knowledge, one of the fundamental aspects of the TPACK framework. Overall, the data yields a general assessment mean of 3.1916, interpreted as "Agree," signifying that teachers generally perceive themselves as proficient but not fully confident in their technological capabilities. This general rating highlights an underlying confidence tempered by noticeable gaps, suggesting room for significant improvement and further professional development. While satisfactory, such a level of technological readiness also underscores that teachers may still experience uncertainty or hesitation in comprehensively adopting or integrating advanced technological tools and platforms into daily instructional practices.

Consequently, this indicates the need for targeted support and structured professional training programs to enhance technological competence.The relatively modest rating suggests that while teachers possess basic technological skills, there might be inadequacies or inconsistencies in their skill sets that impede comprehensive technology integration. This finding emphasizes the necessity for clearly defined and structured training programs to address technological skill gaps, ensuring that teachers possess the practical competencies required for effective classroom use of digital tools and resources. Most notably, the lowest rating among all indicators, 2.9459 for "I know about a lot of different technologies," also interpreted as "Agree," highlights the most significant concern. This rating indicates that teachers possess limited breadth in their technological knowledge, which could constrain their readiness for diversified or innovative technological integration in teaching. Limited awareness or exposure to varied technologies might result in restricted or repetitive use of technology, impacting the potential instructional effectiveness of technological integration.

Addressing this weakness requires strategic measures such as exposure to broader technology options, regular workshops, demonstrations, and enhanced resource accessibility to diversify teachers' technological knowledge. Given the variation in ratings, institutions should recognize that technological readiness among teachers is neither uniformly high nor uniformly weak. The results imply mixed strengths and areas of improvement within teachers' technological knowledge. Consequently, the institution may need differentiated or individualized approaches when providing professional development, training, and support, based on specific skill gaps or readiness levels. This tailored approach would efficiently leverage existing strengths, such as motivation to learn and problem-solving abilities, while systematically addressing specific technological knowledge limitations, thereby creating a more balanced and effective overall technological readiness among educators. The general assessment rating of "Agree" (3.1916) underscores that teachers' technological knowledge readiness is generally positive yet not optimal. Institutions, therefore, should not overlook the importance of sustained support systems, infrastructure upgrades, and professional training initiatives to improve readiness levels further. Continuous and intentional efforts to foster technological proficiency, confidence, and exploration among teachers would enhance their long-term ability to effectively integrate advanced technological tools. Establishing supportive professional communities of practice, technical support teams, and accessible resources can significantly elevate teachers' readiness and comfort in employing technology creatively and effectively.

These results reflect a moderate but promising foundation of technological readiness among teachers, marked by positive attitudes towards learning and engagement with technology, but tempered by notable gaps in skill diversity and breadth of knowledge. Educational leaders and policymakers must capitalize on the demonstrated strengths, such as positive attitudes towards technology learning, and systematically address existing weaknesses through targeted professional development and structured training initiatives. Doing so can significantly enhance technological integration in teaching, ultimately improving instructional practices and student learning outcomes. The study of Abel et al. (2022) affirms that using ICT effectively in the classroom enhances learning. One of the important factors for teachers in the classroom is their competence and confidence in using ICT.

Table 4
Level of teachers' readiness based on TPACK in terms of Technological Knowledge

Technological Knowledge	MEAN	INTERPRETATION
1. I know how to solve my own technical problems.	3.2432	Strongly Agree
2. I can learn technology easily.	3.3378	Strongly Agree
3. I keep up with important new technologies.	3.3919	Strongly Agree
4. I frequently play around with technology.	3.1892	Agree
5. I know about a lot of different technologies.	2.9459	Agree
6. I have the technical skills I need to use technology.	3.0405	Agree
GENERAL ASSEMENT	**3.1916**	**Agree**

Legend: 3.25 – 4.00 Strongly Agree (SA)/ 2.50 – 3.24 Agree (A)/ Utilized 1.75 – 2.49 Disagree (D)/ 1.00 – 1.74 Strongly disagree SD)

2.2 Pedagogical Knowledge (PK) : The results under table 5, the Pedagogical Knowledge (PK) component of the TPACK framework reveal a consistent and reassuring theme: teachers report a high level of readiness in core pedagogical competencies. The general assessment mean score of 3.5000, interpreted as "Strongly Agree," reflects a robust confidence among the teachers when it comes to their ability to manage and deliver effective instruction. This strong self-perception of pedagogical expertise suggests that, as a group, teachers possess a solid foundation upon which technological and content knowledge can be layered. In the broader context of TPACK, this firm pedagogical base is essential, as it serves as the anchor for integrating technology in a way that enhances—not distracts from—student learning.

The teachers feel confident in evaluating student progress, using tools and strategies that likely include formative and summative assessments. The strong rating here is significant because effective assessment is a core skill that shapes instructional decisions, feedback, and student growth. In terms of tech integration, this strength indicates that teachers are already well-versed in identifying what students know and where they need support. These skills can be enhanced further by incorporating tech-based assessment tools such as quizzes on Google Forms, performance tracking systems, or learning analytics platforms.It indicates that knowledge, motivation, and resources must come together for educational change, in the form of technological integration, to be implemented successfully. Without teacher confidence, TPACK might not result in long-term integration into instruction and student development. (Bauer & Kenton, 2005; Ertmer & Ottenbreit-Leftwich, 2010; Corkin, Ekmekci, White & Fisher, 2016; Wozney, Venkatesh, & Abrami, 2006). In addition, teachers' pedagogical beliefs (Chand, V., Deshmukh, K., & Shukla, A., 2020; Tondeur et al., 2017) are vital since they are essentially in the role of utilizing technology to enhance instruction in their classrooms.

Table 5

Level of teachers' readiness based on TPACK in terms of Pedagogical Knowledge

Pedagogical Knowledge	MEAN	INTERPRETATION
1. I know how to assess student performance in a classroom.	3.6486	Strongly Agree
2. I can adapt my teaching based upon what students currently understand or do not understand.	3.5811	Strongly Agree
3. I can adapt my teaching style to different learners.	3.6081	Strongly Agree
4. I can assess student learning in multiple ways.	3.4595	Strongly Agree
5. I can use a wide range of teaching approaches in a classroom setting.	3.4865	Strongly Agree
6. I am familiar with common student understandings and misconceptions.	3.3784	Strongly Agree
GENERAL ASSESMENT	**3.5000**	**Strongly Agree**

Legend: 3.25 – 4.00 Strongly Agree (SA)/ 1.75 – 2.49 Disagree (D)/
2.50 – 3.24 Agree (A)/ Utilized 1.00 – 1.74 Strongly agree SD)

2.3 Content Knowledge (CK) : The table 6 illustrate teachers' readiness based on TPACK in terms of content knowledge clearly demonstrates a strong overall perception of content competence across core subject areas. With a general assessment mean of 3.3322, interpreted as "Strongly Agree," it indicates that teachers collectively possess high levels of confidence in their mastery of fundamental educational content. Such findings reflect positively on the teachers' foundational knowledge, suggesting they are capable of effectively conveying subject-specific concepts to students. Teachers who perceive themselves as knowledgeable within their disciplines are generally better prepared to integrate advanced pedagogical methods, including technological tools, as their instructional focus can shift more seamlessly to optimizing delivery rather than struggling with foundational content.

The participants "Strongly Agree" that they have sufficient knowledge in Mathematics, Social Studies, Science, and Literacy. Like Bandura (1986) once implied, teachers' perceptions about their ability to perform their educational duties are called teacher self-efficacy. This suggests they are well-equipped with subject expertise but may need additional support in integrating technology effectively.

Table 6

Level of teachers' readiness based on TPACK in terms of Content Knowledge

Content Knowledge	MEAN	INTERPRETATION
Mathematics	3.3425	Strongly Agree
1. I have sufficient knowledge about mathematics.	3.2973	Strongly Agree
2. I can use a mathematical way of thinking.	3.3378	Strongly Agree
3. I have various ways and strategies of developing my understanding of mathematics.	3.3107	Strongly Agree
Social Studies	3.2838	Strongly Agree
1. I have sufficient knowledge about social studies.	3.2973	Strongly Agree
2. I can use a historical way of thinking.	3.3562	Strongly Agree
3. I have various ways and strategies of developing my understanding of social studies.	3.2972	Strongly Agree
Science	3.3378	Strongly Agree
1. I have sufficient knowledge about science.	3.2568	Strongly Agree
2. I can use a scientific way of thinking.	3.2703	Strongly Agree
3. I have various ways and strategies of developing my understanding of science.	3.2882	Strongly Agree
Literacy	3.4865	Strongly Agree
1. I have sufficient knowledge about literacy.	3.4189	Strongly Agree
2. I can use a literary way of thinking.	3.3919	Strongly Agree
3. I have various ways and strategies of developing my understanding of literacy.	3.4324	Strongly Agree
GENERAL ASSESMENT	**3.3322**	**Strongly Agree**

Legend: 3.25 – 4.00 Strongly Agree (SA)/ 2.50 – 3.24 Agree (A)/ Utilized 1.75 – 2.49 Disagree (D)/ 1.00 – 1.74 Strongly agree SD)

3. To what extent have teachers integrated educational technologies into their teaching practices in terms of:

3.1 Frequency of technology use in the classroom: Table 7 suggests that educational technology was not an occasional or supplemental practice but a regular and intentional component of teachers' instructional routines. The overall mean score of 3.5135, interpreted as "Strongly Agree," reflects a high level of technology integration among the teachers surveyed. In the context of modern education, where digital tools are increasingly intertwined with pedagogy, such a high general assessment indicates a strong commitment among educators to leverage technology in ways that meaningfully enhance student learning. It also points to a possible shift in teaching culture, where technology use is becoming normalized rather than treated as an optional add-on. The study results suggest a dual-purpose application of educational technology. On the instructional side, teachers are embedding technology into lesson design—perhaps incorporating multimedia tools such as such as PowerPoint, Prezi, video clips, animations interactive simulations, educational games, or online collaborative platforms.

On the administrative side, they may use Learning Management Systems (LMS), grading software, online attendance systems, and digital communication tools to manage the classroom more efficiently. This combination of instructional and logistical integration shows that teachers are leveraging technology for teaching and streamlining their entire professional workflow.In addition, the study of Caresosa, V. (2023), indicated that technology-based teaching practices are crucial for improving teachers' proficiency and work ethics, which support educational innovation and professional growth. However, it is also important to view these results as indicators of current behavior and opportunities for deeper support and development. Even though teachers regularly use technology, the quality of integration can vary. Regular technology integration is only possible when the necessary tools (computers, stable internet, educational software) are readily available.

Table 7

Level of teachers integrated educational technologies into their teaching practices in terms of Frequency of technology use in the classroom

Frequency of technology use in the classroom	**MEAN**	**INTERPRETATION**
1. I regularly integrate technology into my lesson plans to enhance student learning.	3.5000	Strongly Agree
2. I utilize technology for both instructional and administrative tasks in my classroom.	3.5000	Strongly Agree
3. I often incorporate multimedia presentations in my lessons to support student understanding.	3.9324	Strongly Agree
4. I use technology to provide my students with opportunities for self-paced learning.	3.3514	Strongly Agree
5. I regularly update and adapt my use of technology based on student needs and available resources.	3.2838	Strongly Agree
GENERAL ASSESMENT	**3.5135**	**Strongly Agree**

Legend: 3.25 – 4.00 Strongly Agree (SA)/ 1.75 – 2.49 Disagree (D)/
2.50 – 3.24 Agree (A)/ Utilized 1.00 – 1.74 Strongly agree SD)

3.2 Types of educational technologies used : The results presented in Table 8 indicates that teachers commonly incorporate technological tools into their teaching but have not fully maximized their consistent use. Such findings reveal that while educators are open and somewhat proficient in using educational technologies, there remains ample room for expansion and deeper integration. Consequently, the status provides a foundational readiness upon which further technological integration efforts can be strategically enhanced through targeted professional development and resource allocation. This clearly demonstrates that visual and interactive presentation tools have become integral parts of the instructional environment. Teachers' reliance on these tools suggests comfort and familiarity with visually driven instructional delivery, fostering more engaging and dynamic classroom interactions. The high utilization rate of interactive technologies signifies that teachers likely perceive significant instructional value in using visual supports to simplify complex concepts, improve student attention, and actively engage students during instruction. Educational institutions could build upon this strong foundation by encouraging teachers to diversify and deepen the pedagogical approaches utilized through these visual technologies, optimizing their educational effectiveness.The findings from the table also imply that teachers primarily use technologies that seamlessly integrate into their current pedagogical practices or require minimal learning curves. This likely explains the higher preference for presentation or video-based technologies. The lower utilization of assessment or specialized interactive apps likely reflects perceived complexity or the higher initial investment in learning and preparing these digital resources.

Addressing this perception through targeted professional development sessions, hands-on training, and administrative support could greatly increase the likelihood of teachers adopting diverse technological tools, thereby enriching instructional practices and learning experiences for students. The data underscores a clear difference in how teachers utilize interactive presentation tools compared to assessment or specialized educational software. This differential utilization likely arises from varying levels of comfort, perceived utility, ease of use, or available training. Teachers seem more comfortable adopting straightforward, familiar tools like interactive whiteboards or projectors compared to more specialized digital assessment platforms or apps. Recognizing this pattern, institutions could design tailored professional development programs explicitly addressing technological tools with lower integration rates, bridging the comfort gap, and enhancing overall technological competency among educators. The teachers' utilization of technology-based tools has little to do with their instructional abilities. Particularly in the classroom, digital knowledge and skills for efficient integration and application required the instructors' great use of technology tools. Though familiar with digital technology and living in a digital environment does not equate to being digitally competent (Caresosa, V., 2023; Li & Ranieri, 2010). Emphasizing practical application, accessible professional training, and continuous support will enable teachers to confidently diversify their technological integration practices, significantly enhancing overall instructional quality and effectiveness.

Table 8

Level of teachers integrated educational technologies into their teaching practices in terms of Types of educational technologies used

Types of educational technologies used	MEAN	INTERPRETATION
1. I frequently use interactive tv/whiteboards or projectors in my lessons.	3.4595	Strongly Agree
2. I regularly incorporate learning management systems (Ex. Google Classroom, Moodle) to distribute assignments and materials.	3.1081	Agree
3. I use educational apps or software and online manipulatives to make learning experiences interactive	3.1757	Agree
4. I often use online video platforms (Ex. YouTube, TED Talks) to supplement my lessons.	3.2838	Strongly Agree
5. I integrate digital quizzes (Ex. Kahoot, quiziz) and assessment tools into my classroom activities.	2.9730	Agree
GENERAL ASSESMENT	**3.2000**	**Agree**

Legend: 3.25 – 4.00 Strongly Agree (SA)/ 1.75 – 2.49 Disagree (D)/
2.50 – 3.24 Agree (A)/ Utilized 1.00 – 1.74 Strongly agree SD)

3.3 Impact on student engagement and learning outcomes : The overall general assessment means of 3.4568 for Table 9, interpreted as "Strongly Agree," illustrates that teachers perceive educational technology's significant and positive impact on student engagement and learning outcomes. This high rating indicates that educators use technology frequently and recognize its value in improving both how students participate in class and how they perform academically. The emphasis on outcomes here is especially important because it moves beyond surface-level engagement and speaks directly to the effectiveness of instructional strategies. Teachers are not just incorporating digital tools for innovation but are doing so with the deliberate aim of

improving student learning experiences and academic success. This finding signals a strong belief among educators in the efficacy of technology in fostering learning. Technology is not just used for classroom management or administrative ease but is actively contributing to student mastery of academic content. This could include improved assessment performance, deeper understanding of complex concepts, or more sustained knowledge retention. The belief in enhanced learning outcomes may stem from the interactive nature of tech tools, which often provide students with immediate feedback, multiple representations of content, and opportunities to learn at their own pace.

The results in this table also highlight the intersection between technology and pedagogy in a very productive way. Evidently, the respondents are not using technology randomly or for its own sake, but strategically, with an instructional purpose aligned to clear learning goals. This reflects a mature level of integration, where tools are embedded into the curriculum in ways that directly support educational objectives. This intentional usage is essential for ensuring that technology enhances, rather than distracts from, student learning experiences. Moreover, the strong agreement across all items suggests that the benefits of technology are not confined to a specific subject or grade level but are likely experienced across a range of instructional settings. Whether in mathematics, science, language arts, or social studies, teachers appear to recognize that digital tools can amplify instruction and enrich student learning. This universality makes a strong case for school-wide or district-level support for continued investment in technology infrastructure, training, and curriculum development that incorporates tech-based strategies.

However, while the data shows high levels of perceived impact, it is also important to contextualize these self-reported measures. Teachers' perceptions are a vital source of data, but they should be complemented with student achievement records, engagement analytics, and feedback from learners themselves to fully capture the depth of technology's influence. That said, teacher belief is a powerful predictor of implementation. When educators believe that technology improves learning, they are far more likely to explore, adopt, and sustain meaningful tech practices. In conclusion, this table shows that teachers see clear, positive outcomes from using educational technology. From fostering engagement and participation to enhancing understanding, differentiation, and critical thinking, technology is serving as a multidimensional tool for modern instruction. These findings suggest that the integration of technology is not superficial but rooted in an awareness of how it can support core pedagogical goals.

The study of Zulueta et al. (2021b) demonstrates that educators can integrate ICT and change their instruction from traditional methods into a dynamic and innovative one appropriate for the current population of students characterized as tech-savvy. Consequently, it produces a classroom that prioritizes learning and changes the instructor into an innovator and facilitator. Technology is a multidimensional tool for modern instruction, from fostering engagement and participation to enhancing understanding, differentiation, and critical thinking. The high levels of perceived impact, the focus now should be on maintaining this momentum through continuous training, collaborative learning, and equitable access to tools and resources that allow every teacher and student to benefit from technology-enhanced education.

Table 9

Level of teachers integrated educational technologies into their teaching practices in terms of Impact on student engagement and learning outcomes

Impact On Student Engagement and Learning Outcomes	MEAN	INTERPRETATION
1. The use of technology has led to improved student participation during lessons.	3.5135	Strongly Agree
2. I believe that educational technologies have enhanced my students' learning outcomes	3.5270	Strongly Agree
3. Technology integration has helped me differentiate instructions to meet individual student needs.	3.4189	Strongly Agree
4. My students demonstrate a better understanding of concepts when technology is used in class.	3.3919	Strongly Agree
5. I have seen improvement in my students' critical thinking and problem-solving skills through the use of technology.	3.4324	Strongly Agree
GENERAL ASSESMENT	**3.4568**	**Strongly Agree**

Legend: 3.25 – 4.00 Strongly Agree (SA)/ 2.50 – 3.24 Agree (A)/ Utilized 1.75 – 2.49 Disagree (D)/ 1.00 – 1.74 Strongly agree SD)

4. Is there a significant relationship Between the Level of Teachers' Readiness when grouped according to profile?

Table 10 displays the results of chi-square tests examining the relationship between teachers' readiness (measured by TPACK—Technological, Pedagogical, and Content Knowledge) and three demographic variables: age, educational attainment, and length of service. Unequivocally it suggests that there are no statistically significant differences in teachers' readiness levels when grouped according to their age, educational attainment, or length of service. All p-values across the various indicators are above the conventional significance threshold of 0.05, leading to the uniform interpretation of "Not Significant." This means that regardless of how teachers differ in these profile categories, their self-reported readiness, whether in terms of technology, pedagogy, or content—remains relatively uniform. Such consistency across the board points to a teaching cohort that shares a similar perception of preparedness, potentially indicating that readiness is more influenced by shared experiences, institutional culture, or access to resources than by demographic or experiential differences.

However, the age and social science under Content Knowledge have a significant relationship (p = .042) between teachers' age and their content knowledge, specifically in Social Science. This suggests that age might influence Social Science content knowledge among teachers. Length of Service and Content Knowledge (Social Science & Literacy) have significant relationships (p = .032 and p = .009, respectively) between length of service and content knowledge in Social Science and Literacy. This suggests that teachers with more years of experience may have different levels of content knowledge in these specific subject areas. Most of the chi-square tests show no significant relationship between teachers' overall TPACK scores or their TPACK scores broken down by subject area, age, educational attainment, or length of service. This suggests that these demographic factors do not strongly predict teachers' readiness to integrate technology as measured by TPACK.

Furthermore, Joseph et al. (2021) explained that as teachers' age or years of experience increased, their technology readiness tended to decrease. Taking age as a variable under Technological Knowledge, with 0.21 as p-value, this result challenges some common assumptions Teachers who were older or seasoned were not as confident or self-assured when it comes to incorporating technology into their lessons. However, teachers who were younger or had not as much experience felt more at ease or ready to employ technology and digital tools in the classroom. Qureshi, Khan, Raza, Imran, and Ismail (2021) stated that teachers' efficacy contributes to a broader culture of innovation within schools, as teachers feel empowered to share successes and challenges related to technology integration. Through teacher training programs that often demonstrate a higher level of education, teachers tend to exhibit greater comfort and proficiency with technology integration. These studies frequently identify educational attainment as an important factor, such as prior experience and access to resources, even though they may not specifically identify it as the only predictor.

Table 10

Relationship Between the Level of Teachers' Readiness when Grouped According to Profile

INDICATORS		Chi-square value	p-value	Interpretation
Age	• Technological knowledge	65.066[a]	.021	**Significant**
	• Pedagogical knowledge	33.334[a]	.402	Not Significant
	• Content knowledge	70.996	.086	Not Significant
	- Math	23.669	.481	Not Significant
	- Social Science	32.129	.042	**Significant**
	- Science	36.518	.130	Not Significant
	- Literary	23.240	.107	Not Significant
Educational Attainment	• Technological knowledge	30.269[a]	.112	Not Significant
	• Pedagogical knowledge	33.334	.402	Not Significant
	• Content knowledge	9.382[a]	1.000	Not Significant
	- Math	7.723[a]	.806	Not Significant
	- Social Science	3.163[a]	.977	Not Significant
	- Science	4.826[a]	.988	Not Significant
	- Literary	3.575[a]	.893	Not Significant
Length of Service	• Technological knowledge	12.749[a]	.691	Not Significant
	• Pedagogical knowledge	27.324	.702	Not Significant
	• Content knowledge	51.515	.645	Not Significant
	- Math	38.384[a]	.032	**Significant**
	- Social Science	26.167[a]	.160	Not Significant
	- Science	22.114	.776	Not Significant
	- Literary	32.245	.009	**Significant**

5. Is there a significant relationship between the extent teachers integrated educational technologies into their teaching practices when grouped according to profile?

Table 11 presents the results of chi-square tests investigating the relationship between teachers' technology integration practices and three demographic variables: age, educational attainment, and length of service. There is an absence of statistically significant relationships between the teachers' technology integration practices (frequency of use, types of technology used, impact on student engagement) and their age, educational attainment, or length of service. The p-values for almost all tests are far greater than the typical significance level of 0.05. This indicates that these demographic factors do not significantly predict or explain variations in how teachers integrate technology into their classrooms. While most p-values are non-significant, it is important to note that some chi-square values are relatively high (e.g., 31.292 for age and frequency of technology use). The corresponding p-values remain above 0.05, indicating that these associations are not statistically significant. Any observed patterns are likely due to chance and not a true relationship between the variables.

However, looking closely under the indicators of age, and years of experience of frequency of use of technology valued the lowest in terms of p-value of .502 for age, .452 for length of service under study were negatively correlated to technology readiness. This suggests that as teachers' age and experience increase, their confidence or readiness to integrate technology into teaching practices tends to decrease. This negative correlation suggests and can be associated with the challengers in adapting to new technological advancement in education. As was highlighted in the research of Cardullo et al. (n.d.), older teachers reported with lower confidence and self-efficacy in navigating technology platforms compared to younger teachers. Age and teaching experience negatively affect their computer proficiency, while teacher beliefs and readiness positively influence the integration of technology.

This analysis reveals that age, educational attainment, and years of teaching experience are not significant predictors of teachers' technology integration practices. The study highlights the need to investigate other factors that might be more crucial in promoting effective technology integration in classrooms.

Table 11
Relationship between the extent teachers integrated educational technologies into their teaching practices when grouped according to profile

INDICATORS		Chi-square value	p-value	Interpretation
Age	Frequency of technology use in the classroom	31.292[a]	.502	Not Significant
	Types of Educational Technology Used	34.581[a]	.536	Not Significant
	Impact On Student Engagement And Learning Outcomes	26.991[a]	.718	Not Significant
Educational Attainment	Frequency of technology use in the classroom	8.269[a]	.940	Not Significant
	Types of Educational Technology Used	21.608[a]	.250	Not Significant
	Impact On Student Engagement And Learning Outcomes	6.421[a]	.983	Not Significant
Length of Service	Frequency of technology use in the classroom	32.295[a]	.452	Not Significant
	Types of Educational Technology Used	32.330[a]	.644	Not Significant
	Impact On Student Engagement And Learning Outcomes	27.533[a]	.692	Not Significant

6. Based on the results of the study, what professional development program can be proposed? Intervention Program "Work Smart and Be Techy". The program's first component, Foundational Tech Training, is designed to address basic technological competencies that some teachers, particularly those new to digital tools or less confident in using them, may still lack. This includes hands-on sessions covering educational tools such as learning management systems (LMS), Google Workspace, and multimedia presentation platforms. The objective is to ensure that all teachers have a minimum threshold of digital literacy, enabling them to perform essential tasks such as managing digital classrooms, designing basic online activities, and communicating effectively with students using technology. The study's findings, which indicate uniform readiness regardless of age or service length, support offering this training widely, focusing especially on those who may not have had formal exposure to such tools.

The second component, Pedagogy-Driven Tech Integration, builds on teachers' strong pedagogical foundation, as seen in the TPACK-based assessments. This component seeks to enhance how technology is applied in alignment with sound instructional design, ensuring that tech use is not superficial but grounded in well-established teaching strategies. Training here would include developing TPACK-informed lesson plans, assessing student learning through digital tools, and applying technology to facilitate deeper understanding. Teachers who already feel confident in their content and teaching methods but need assistance in marrying these with technological tools will benefit the most from this component, emphasizing coherence, purpose, and instructional value.

The third part of the program focuses on Differentiated Instruction Using Technology, a crucial need highlighted by the responses regarding self-paced learning and individualized instruction. While teachers strongly agreed with using tech for differentiation, the slightly lower mean scores suggest they are still building capacity in this area. This component would introduce digital platforms and instructional strategies that help address varied student learning needs, such as adaptive learning programs, multimedia-rich content, and tiered assignments. By tailoring instruction through technology, teachers can ensure more equitable learning experiences, making education inclusive and responsive to all student abilities. The fourth component, Enhancing Critical Thinking with Technology, targets one of the most meaningful applications of edtech: fostering 21st-century skills.

According to the study results, teachers agree that technology improves critical thinking and problem-solving but may need structured support to design lessons that effectively cultivate these skills. This program segment uses digital simulations, project-based platforms, coding exercises, and inquiry-based tools to develop these competencies. Teachers will learn how to frame problems, guide student inquiry using tech, and assess deeper cognitive engagement, thus making their classrooms more dynamic and skills oriented.

Technical Support Orientation is another crucial component identified through qualitative analysis. Teachers expressed that the availability and quality of technical support are major determinants of their ability to integrate technology confidently. This program segment includes training on basic troubleshooting, effective use of IT support channels, and how to prepare backup plans for tech malfunctions. It aims to reduce anxiety related to technical issues and empower teachers to manage common problems independently. When teachers feel secure in handling technical hurdles, they are more likely to use technology creatively and frequently. The program also incorporates Peer Mentoring and Tech Coaching to create a sustainable support structure. This addresses the need for continuous, site-based professional learning. More technologically advanced teachers can mentor others, creating a collaborative culture of tech integration. This component ensures that professional development is ongoing and organically embedded within the school community through observation exchanges, informal meetups, and mentoring groups. Teachers gain support and a sense of shared responsibility and empowerment in improving tech usage collectively.

Finally, Leadership for Tech Integration focuses on building the capacity of school leaders, department heads, and coordinators to spearhead technology-related initiatives. Without leadership buy-in and strategic planning, even the most well-designed training programs can falter. This component equips leaders with the tools to develop ICT-related

policies, evaluate the effectiveness of tech integration, and advocate necessary resources. When leaders are well-prepared, they can model tech use, provide informed support to staff, and sustain momentum for long-term technological transformation in schools.

Key Result Area	Objective	Strategies/ Activities	Target Participants	Time Frame	Budget Allocation	Success Indicators
1. Foundational Tech Training	Hands-on sessions on basic educational technologies (e.g., LMS, Google Workspace, multimedia tools).	Equip teachers with foundational tech skills and build confidence in everyday classroom integration.	Teachers with low to moderate tech proficiency from the previous year; early-career teachers.	July to August SY 2025-2026	10, 000 (Meals)	90% of t participants
2. Pedagogy-Driven Technology Integration	Training on TPACK-aligned strategies; integrating tech meaningfully into lesson planning and assessment.	Align technology is used with sound pedagogical principles and content delivery.	All teachers, especially those with strong pedagogy but limited tech strategies.	September to October SY 2025-2026	20,000 (Meals)	100% of participants
3. Differentiated Instruction Using Technology	Workshops on using technology for personalized learning, self-paced platforms, and differentiated instruction.	Enhance capacity to meet diverse learner needs through digital tools.	Mid to advanced tech users; teachers in diverse classrooms.	November SY 2025-2026	15, 000 (Meals)	100% of participants
4. Enhancing Critical Thinking through EdTech	Training in designing tech-enabled tasks to develop problem-solving and higher-order thinking skills.	Improve student engagement and critical thinking outcomes via innovative digital activities.	Subject area specialists and curriculum coordinators.	January SY 2025-2026	20,000 Meals and transportation	100% of participants
5. Technical Support Orientation	Sessions for teachers on basic troubleshooting and maximizing school-provided tech support.	Reduce tech-related anxiety and improve self-sufficiency.	All teachers, especially those citing tech support as a barrier.	SY 2025-2026	7,000 /quarter meals	90% of participants
6. Peer Mentoring and Tech Coaching	Creation of tech mentoring groups and peer-to-peer classroom observation exchanges.	Foster a culture of collaboration and ongoing, site-based support.	Tech-savvy teachers, experienced mentors.	Quarterly SY 2025-2026	30,000 Meals	100% of participants
7.Leadership for Tech Integration	Capacity-building for department heads and administrators to lead tech-based initiatives.	Strengthen top-down and peer leadership in sustaining technology use.	School leaders, department heads, ICT coordinators.	February SY 2025-2026	.80,000 Meals, Venue and Transpo	95% of participants

the presentation, analysis, interpretation, and discussion of results done on the previous chapter.

SUMMARY OF FINDINGS: This study investigated the readiness of teachers from Dila and Balibago Elementary Schools in Santa Rosa, Laguna, to integrate technology into their teaching practices. The study used the TPACK framework to examine three core knowledge domains: Technological, Pedagogical, and Content Knowledge. The key findings include:

- Demographics: The teachers consisted largely of experienced and seasoned educators, with a majority (39.2%) falling within the 46-year-old and above age group. Regarding educational attainment, 63.5% held bachelor's degrees, 35.1% had Master's degrees, and only 1.4% had doctoral degrees. The length of service data revealed that most teachers (35.1%) had been teaching for 5–10 years, while 33.8% had 16 or more years of service.
- Readiness Based on TPACK: findings showed varying levels across the three domains. Technological knowledge received a general assessment of "Agree" with a mean of 3.1916, indicating that while teachers are generally comfortable using technology, they still face limitations in terms of skill diversity and regular exploration on the other hand, both Pedagogical Knowledge (mean: 3.5000) and Content Knowledge (mean: 3.3322) were rated as "Strongly Agree," showing that teachers feel confident in instructional strategies and subject matter expertise.
- Technology Teaching Practices: Teachers strongly agreed that technology improved student participation, enhanced learning outcomes, and fostered critical thinking and problem-solving skills. With a general mean of 3.4568, teachers perceived that technology captured students' interest and helped them understand complex concepts better.
- Relationship between Profile and Readiness: The study found no evident relationships between teachers' technology preparedness or integration methods and demographic factors like age, educational achievement, or duration of service.

V. CONCLUSIONS

The findings indicate that although most teachers are prepared both pedagogically and content-wise, they continue to progress toward being completely self-assured digital educators. They are willing to learn; what is required is continuous, organized, and experience-level-appropriate professional development.

- While they are generally prepared, teachers lack the necessary tools to incorporate technology into their lessons smoothly. Despite their considerable pedagogical and topic understanding, their technical fluency is still lacking.
- Technology integration readiness cannot be determined only by experience and educational attainment. This suggests that technical competency is shaped by continuous training rather than background.
- Effective integration cannot be ensured by regular technology application. Teachers may utilize technology frequently, but deeper integration that aligns with learning objectives calls for specific support and ongoing education.
- Finally, the proposed professional development program responds directly to the gaps and opportunities identified in the study. It aligns with TPACK principles and addresses integration's technological, pedagogical, and leadership dimensions. By focusing on continuous, context-sensitive, and collaborative training, the program seeks to empower all educators, regardless of age, tenure, or qualification, to fully realize the potential of technology in enhancing instruction and improving student outcomes.

RECOMMENDATIONS

Considering the results, the following suggestions were presented:

1. Establish a stratified professional development program with fundamental, intermediate, and advanced training tracks catered to varying preparation levels, like the suggested "Work Smart and Be Techy." Regardless of where they begin, this guarantees that no instructor is left behind.

2. Encourage schools to establish communities of practice where educators can exchange best practices, provide peer mentorship, and experiment with new digital technologies in a safe setting.

3. All teachers need access to the fundamental hardware, software, and internet needed for effective tech integration, so invest in infrastructure and fair tool distribution.

4. Regularly assess training programs to ensure they align with changing classroom requirements and technology developments. Feedback loops can help improve delivery strategies and content.

5. Foster peer mentorship and leadership by identifying tech-savvy educators and giving them the tools to help colleagues successfully integrate technology. Incorporate digital skills into teacher evaluation and development plans, emphasizing technology use as a crucial teaching ability in the twenty-first-century classroom.

7. Finally, the proposed Professional Development Program should be adopted and continuously refined based on the identified needs and strengths. School districts should pilot the seven-component program and use feedback from teachers to adjust delivery modes, topics, and scheduling. Schools can document success stories and challenges for scalability, building a repository of best practices in tech integration. The program's emphasis on mentorship, leadership development, and critical thinking integration through technology makes it a comprehensive model that could significantly elevate teaching quality and student outcomes when implemented with fidelity.

8. Further Research and to gain a deeper understanding of the factors influencing technology integration, future research should focus on these other variables. Qualitative research methods (interviews, focus groups) could provide valuable insights into teachers' experiences, perspectives, and challenges related to technology integration, such as accessibility and availability. Quantitative studies could also explore the relationships between technology integration and these other factors using more sophisticated statistical techniques.

REFERENCES

1. Abel, V., Tondeur, J., & Sang, G. (2022). Teacher perceptions about ICT integration into classroom instruction. From MDPI: https://www.mdpi.com/2227-7102/12/9/609
2. Abulencia, C. C., Ampo, P. H. B., Gonzales, F. M., Hyldgaard, S. E., Mangulabnan, M. C., Leva, E. F., . . . Vivo, M. V. C. (2022). Teachers' Perception of Instructional Technology Application and Integration Competence to the Teaching-Learning Process. Retrieved from https://ejournals.ph/article.php?id=17560
3. Alamri, H., Watson, S., & Watson, W. (2021). Learning technology models that support personalization within blended learning environments in higher education. From Springer: https://link.springer.com/article/10.1007/s11528-020-00530-3
4. Antonietti, C., Cattaneo, A., & Amenduni, F. (2022). Can teachers' digital competence influence technology acceptance in vocational education? From Elsevier: https://www.sciencedirect.com/science/article/pii/S0747563222000887
5. Asfahani, A., El-Farra, S., & Iqbal, K. (2024). International benchmarking of teacher training programs: Lessons learned from diverse education systems. From Edujavare: https://edujavare.com/index.php/EDUJAVARE/article/view/28
6. Atlas, S. (2023). ChatGPT for higher education and professional development: A guide to conversational AI. From Digital Commons: https://digitalcommons.uri.edu/cgi/viewcontent.cgi?article=1547&context=cba_facpubs
7. Backfisch, I., Lachner, A., Sturmer, K., & Scheiter, K. (2021). Variability of teachers' technology integration in the classroom: A matter of utility! From Elsevier: https://www.sciencedirect.com/science/article/pii/S0360131521000361?casa_token=TplHJG1Q6mYAAAAA:8OKSY0QddXxni1nzfxjS8441VlejxvMTPP7TjEp4Lvp5HZb78F0ngF-cNsv_LnfsE9lx38amumlc
8. Bajracharya, J. (2021). Technology integration models and frameworks in teaching and training. From NEPJOL: https://nepjol.info/index.php/JTD/article/view/41674
9. Bereczki, E., & Karpati, A. (2021). Technology-enhanced creativity: A multiple case study of digital technology-integration expert teachers' beliefs and practices. From Elsevier: https://www.sciencedirect.com/science/article/pii/S1871187121000067
10. Bragg, L., Walsh, C., & Heyeres, M. (2021). Successful design and delivery of online professional development for teachers: A systematic review of the literature. From Elsevier: https://www.sciencedirect.com/science/article/pii/S036013152100035X?casa_token=vOlr611QIrUAAAAA:WqxerZUegaufKRtVyQRzIJvlktts15TzxAzzUDpZLFOfeAFDEJqpQhq_ed36YNNv2KSUJij42X0W
11. Bui, T. (2022). English teachers' integration of digital technologies in the classroom. From Elsevier: https://www.sciencedirect.com/science/article/pii/S2666374022000802
12. Cabasan, R. A. (2024). Effective Technology Integration: Closing the Digital Gap among High School Students. Journal of Interdisciplinary Perspectives, 2(8), 397-407. https://doi.org/10.69569/jip.2024.0295
13. Cardullo, V., Wang, C., Burton, M., & Dong, J. (n.d.). K-12 Teachers' Remote Teaching Self-Efficacy during the Pandemic. https://eric.ed.gov/?id=EJ1351453

14. Caresosa, V. (2023). Technology-Based Teaching Practices, Teachers' Competence and Work Values. Psychology and Education: A Multidisciplinary Journal, 16(7), 785-797. https://doi.org/10.5281/zenodo.10552821
15. Cattaneo, A., Antonietti, C., & Rauseo, M. (2022). How digitalised are vocational teachers? Assessing digital competence in vocational education and looking at its underlying factors. From Elsevier: https://www.sciencedirect.com/science/article/pii/S0360131521002359
16. Cavas, B., Cavas, P., Karaoglan, B., & Kisla, T. (2009). A study on science teachers' attitudes toward information and communication technologies in education. TOJET: The Turkish Online Journal of Educational Technology, 8(2). Retrieved from https://eric.ed.gov/?id=ED505935
17. Chaidam, O., & Poonputta, A. (2022). Learning Achievement Improvement of 1st Grade Students by Using Problem-Based Learning (PBL) on TPACK MODEL. From ERIC: https://eric.ed.gov/?id=EJ1345683
18. Chan, C. (2023). A comprehensive AI policy education framework for university teaching and learning. From Springer: https://link.springer.com/article/10.1186/s41239-023-00408-3
19. Chan, C., & Hu, W. (2023). Students' voices on generative AI: Perceptions, benefits, and challenges in higher education. From Springer: https://link.springer.com/article/10.1186/s41239-023-00411-8
20. Chand, V., Deshmukh, K., & Shukla, A. (2020). Why does technology integration fail? Teacher beliefs and content developer assumptions in an Indian initiative. From Springer: https://link.springer.com/article/10.1007/s11423-020-09760-x?trk=public_profile_project-title
21. Chen, G., Chan, C., Chan, K., & Clarke, S. (2020). Efficacy of video-based teacher professional development for increasing classroom discourse and student learning. From Taylor and Francis: https://www.tandfonline.com/doi/abs/10.1080/10508406.2020.1783269?casa_token=y5S8K1VwKcEAAAAA:Weq2VnoicqMNe8OVAS-sZ_w2fGQFUmLOFuDx4mYCWqTQozKy3KeJDecZ45GgXgFtXrTVS4R8spONjwc
22. Cheung, A. (2023). Language teaching during a pandemic: A case study of zoom use by a secondary ESL teacher in Hong Kong. From Sage Pub Journal: https://journals.sagepub.com/doi/abs/10.1177/0033688220981784
23. Christopoulos, A., & Sprangers, P. (2021). Integration of educational technology during the Covid-19 pandemic: An analysis of teacher and student receptions. From Taylor and Francis: https://www.tandfonline.com/doi/abs/10.1080/2331186X.2021.1964690
24. Dele-Ajayi, O., Fasae, O., & Okoli, A. (2021). Teachers' concerns about integrating information and communication technologies in the classrooms. From Journals Plos: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0249703
25. Dolighan, T., & Owen, M. (2021). Teacher efficacy for online teaching during the COVID-19 pandemic. From Journals Library: https://journals.library.brocku.ca/brocked/index.php/home/article/view/851
26. EdTech Books. (n.d.). Retrieved from https://edtechbooks.org/k12handbook/technology_integration
27. Fairman, J., Smith, D., & Pullen, P. (2022). The challenge of keeping teacher professional development relevant. From Taylor and Francis: https://www.taylorfrancis.com/chapters/edit/10.4324/9781003357384-17/challenge-keeping-teacher-professional-development-relevant-janet-fairman-david-smith-paige-pullen-steve-lebel
28. Fernandez-Batanero, J. (2022). Digital competences for teacher professional development. Systematic review. From Taylor and Francis: https://www.tandfonline.com/doi/abs/10.1080/02619768.2020.1827389?casa_token=VFUjyKyOn6gAAAAA:ZAaQhRt4ry02FbxikcpBpiGczJZCHvF8kE67NzoTf7XycnNiAUGT1qUYoUB2VvjQ-hfN_5p_Nu6XwhM
29. Francom, G. (2020). Barriers to technology integration: A time-series survey study. From Taylor and Francis : https://www.tandfonline.com/doi/abs/10.1080/15391523.2019.1679055?casa_token=cP5AbD91SWoAAAAA:MUZktJ1SfuCMLUfU9mIoRlv5k6E5B745H8AdZpCIsxFq5Q05vapilPl8NjdL5j68joh95NIu1dbrzUc
30. Garzón-Artacho, E., Sola-Martínez, T., Romero-Rodríguez, J., & Gómez-García, G. (2021). Teachers' perceptions of digital competence at the lifelong learning stage. Heliyon, 7(7), e07513. https://doi.org/10.1016/j.heliyon.2021.e07513
31. Haegele, J., Wilson, W., & Zhu, X. (2021). Barriers and facilitators to inclusion in integrated physical education: Adapted physical educators' perspectives. From Sage Pub Journals: https://journals.sagepub.com/doi/abs/10.1177/1356336X20944429?casa_token=d3j3KprHUksAAAAA

:iIm65MKs5vdkLyfRE2nl9W3skswe4kYI4J6M_M1-EZzw-rc7Uxc9igN1shTtBKT34XGHop6YHUil734
32. Hakim, B. (2020). Technology integrated online classrooms and the challenges faced by the EFL teachers in Saudi Arabia during the COVID-19 pandemic. From Journals AIAC: https://journals.aiac.org.au/index.php/IJALEL/article/view/6376
33. Hamutoglu, N., & Basarmak, U. (2020). External and internal barriers in technology integration: A structural regression analysis. From Open Access: http://openaccess.ahievran.edu.tr/xmlui/handle/20.500.12513/4538
34. Handayani, S., Hussin, M., & Norman, M. (2023). Technological pedagogical content knowledge (TPACK) model in teaching: A review and bibliometric analysis. From PEGEGOG: https://www.pegegog.net/index.php/pegegog/article/view/2174
35. Harris, M., Blocker, K., & Rogers, W. (2022). Older adults and smart technology: facilitators and barriers to use. From Frontier Sin: https://www.frontiersin.org/articles/10.3389/fcomp.2022.835927/full
36. Hero, J. L., Zulueta, M. E., Gloria, D. S., Tongol, J. L., Dela Cruz, Sr., A. C., Sagun, A. T., Cajurao, G. V. & Cabrera, W. C. (2021). Mastering Innovations in the Lens of Information and Communications Technology (ICT) Competence and Practices of 21st Century Filipino Teachers: A Comparison among Thailand, Vietnam, and the Philippines. International Journal of Multidisciplinary: Applied Business and Education Research, 2(4).
37. Hebert, C., & Jenson, J. (2021). "Access to technology is the major challenge": Teacher perspectives on barriers to DGBL in K-12 classrooms. From Sage Pub Journals: https://journals.sagepub.com/doi/abs/10.1177/2042753021995315
38. Hennessy, S., D'Angelo, S., McIntyre, N., & Koomar, S. (2022). Technology use for teacher professional development in low-and middle-income countries: A systematic review. From Elsevier: https://www.sciencedirect.com/science/article/pii/S2666557322000088
39. Jiménez-Hernández, D., González-Calatayud, V., Torres-Soto, A., Mayoral, A. M., & Morales,
40. J. (2020). Digital competence of future secondary school teachers: differences
41. according to gender, age, and branch of knowledge. Sustainability, 12(22), 9473.
42. https://doi.org/10.3390/su12229473
43. Joseph, G. V., Thomas, K. A., & Nero, A. (2021). Impact of technology readiness and techno
44. stress on teacher engagement in higher secondary schools. Digital Education Review,
45. 40, 51–65. https://doi.org/10.1344/der.2021.40.51-65
46. Kamble, A., Gauba, R., Desai, S., & Golhar, D. (2021). Learners' perception of the transition to instructor-led online learning environments: Facilitators and barriers during the COVID-19 pandemic. From ERUDIT: https://www.erudit.org/en/journals/irrodl/2021-v22-n1-irrodl05934/1076287ar/abstract/
47. Kelley, T., Knowles, J., Holland, J., & Han, J. (2020). Increasing high school teachers self-efficacy for integrated STEM instruction through a collaborative community of practice. From Springer: https://link.springer.com/article/10.1186/s40594-020-00211-w
48. Kimmons, R., Graham, C., & West, R. (2020). The PICRAT model for technology integration in teacher preparation. From Learn Tech Lib: https://www.learntechlib.org/p/210228/
49. Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108(6), 1017- 1054
50. Mercader, C., & Gairin, J. (2020). University teachers' perception of barriers to the use of digital technologies: the importance of academic discipline. From Springer: https://link.springer.com/article/10.1186/s41239-020-0182-x
51. Mustafina, A. (2016). Teachers' attitudes toward technology integration in a Kazakhstani secondary school. International Journal of Research in Education and Science, 2(2), 322–332. Retrieved from https://ijres.net/ index.php/ijres/article/view/112
52. Nueva, M. G. C. (2019). Filipino teachers' attitude towards technology — its determinants and association with technology integration practice. In De La Salle Santiago Zobel School, Asia-Pacific Social Science Review (Vol. 19, Issue 3, pp. 167–184). https://www.dlsu.edu.ph/wp-content/uploads/pdf/research/journals/apssr/2019-September-vol19-3/14-filipino-teachers-attitude-towards-technology%E2%80%94its-determinants-and-association-with-technology-integration-practice.pdf
53. Numonjonov, S. (2020). Innovative methods of professional training. From Elibrary: https://elibrary.ru/item.asp?id=42658599

54. Obispo, R. D. (2023). Educators' Perception of Technology Integration in the Classroom: Basis for the Development of Action Plan. Retrieved from https://ejournals.ph/article.php?id=22945
55. Pasco, C. (2023). Level of Teachers' Information and Communication Technology (ICT) Integration in Teaching and Learning English. Psychology and Education: A Multidisciplinary Journal, 8(6), 1-17. https://doi.org/10.5281/zenodo.7897850
56. Paudel, P. (2021). Online education: Benefits, challenges and strategies during and after COVID-19 in higher education. From Semantic Scholar: https://pdfs.semanticscholar.org/2d19/3d66504adc38255af97e7b78871a0105d09e.pdf
57. Popova, A., Evans, D., & Breeding, M. (2022). Teacher professional development around the world: The gap between evidence and practice. From Academic OUP: https://academic.oup.com/wbro/article-abstract/37/1/107/6292021
58. Qureshi, M., Khan, N., Raza, H., Imran, A., & Ismail, F. (2021). Digital technologies in education 4.0. Does it enhance the effectiveness of learning? From UNIKL: https://ir.unikl.edu.my/xmlui/handle/123456789/25661
59. Raygan, A., & Moradkhani, S. (2022). Factors influencing technology integration in an EFL context: investigating EFL teachers' attitudes, TPACK level, and educational climate. From Taylor and Francis : https://www.tandfonline.com/doi/abs/10.1080/09588221.2020.1839106?casa_token=61hcBM36evsAAAAA:4G-5gT7UZCCZ2WYt-rLjIih5Lo6FdeD-2EcwO-GRtSOdrlcbBrS1rHnSqeWyWmBKtRneR3166ujKE2U
60. Rich, P., Mason, S., & O'Leary, J. (2021). Measuring the effect of continuous professional development on elementary teachers' self-efficacy to teach coding and computational thinking. From Elsevier: https://www.sciencedirect.com/science/article/pii/S0360131521000737?casa_token=M8ul0dKxD3AAAAAA:1V3yCtzRTU6XFyQ_6LAotnGJQSOPsnx-hXVBavQYUlqT-dKdZr-4DR8gbjBeCvReB1QfG3EZiXIj
61. Robles, E. B. (2023). Pre-service Teachers' Knowledge of How to Use Modern Technological Resources in Teaching Mathematics in the New Normal: A Foundation of Strategic Intervention Plan. Retrieved from https://ejournals.ph/article.php?id=22946
62. Sancar, R., Atal, D., & Deryakulu, D. (2021). A new framework for teachers' professional development. From Journal PLOS: https://www.sciencedirect.com/science/article/pii/S0742051X21000299?casa_token=ti5cuSAlbg4AAAAA:exarid1JhpMAqudPJkaX9iDiJ21dJQ0oeEJfTsEan4weuWjG_UDGxKZbX5g2fXUKoq0H_T8OT3R
63. Santos, J., & Castro, R. (2021). Technological Pedagogical content knowledge (TPACK) in action: Application of learning in the classroom by pre-service teachers (PST). From Elsevier: https://www.sciencedirect.com/science/article/pii/S2590291121000061
64. Seifu, K. (2020). Determinants of information and communication technology integration in teaching-learning process at Aksum University. From Taylor and Francis: https://www.tandfonline.com/doi/abs/10.1080/2331186X.2020.1824577
65. Seufert, S., Guggemos, J., & Sailer, M. (2021). Technology-related knowledge, skills, and attitudes of pre-and in-service teachers: The current situation and emerging trends. From Elsevier: https://www.sciencedirect.com/science/article/pii/S0747563220303022
66. Sims, S., & Fletcher-Wood, H. (2021). Identifying the characteristics of effective teacher professional development: a critical review. From Taylor and Francis: https://www.tandfonline.com/doi/abs/10.1080/09243453.2020.1772841?casa_token=29Qlw6bGk18AAAAA:AidfGrpB2zKWlw9jSLpm4tx3LPAwiLuMGdXZ3a9S0X9FF0yPn77dbZ-2w23iQ7dvWEPmAII1mzqOCk4
67. Semerci, A., & Aydin, M. (2018). Examining high school teachers' attitudes toward ICT use in education. International Journal of Progressive Education, 14(2), 93–105. Retrieved from https://files.eric.ed.gov/fulltext/ EJ1177301.pdf
68. Smith, C., & Gillespie, M. (2023). Research on professional development and teacher change: Implications for adult basic education. From Taylor and Francis: https://www.taylorfrancis.com/chapters/edit/10.4324/9781003417996-7/research-professional-development-teacher-change-implications-adult-basic-education-cristine-smith-marilyn-gillespie
69. Trainin, G., Friedrich, L., & Deng, Q. (2018). The impact of a teacher education program redesign on technology integration in elementary preservice teachers. Contemporary Issues in Technology and Teacher Education, 18(4). https://eric.ed.gov/?id=EJ1198782

70. Torchia, R. (2023b, October 31). Technology in the Classroom & The Benefits for K-12 Schools. Technology Solutions That Drive Education. Retrieved from https://edtechmagazine.com
71. Tondeur, J., Scherer, R., Siddiq, F., & Baran, E. (2020). Enhancing pre-service teachers' technological pedagogical content knowledge (TPACK): A mixed-method study. From Springer: https://link.springer.com/article/10.1007/s11423-019-09692-1
72. Wilson, M., Ritzhaupt, A., & Cheng, L. (2020). The impact of teacher education courses for technology integration on pre-service teacher knowledge: A meta-analysis study. From Elsevier: https://www.sciencedirect.com/science/article/pii/S0360131520301391?casa_token=AOP2_jIAU8AAAAA:7PTraPBSoDFc0dMfSBLVbrc66D7zTAbCbQC70VlctwbPhgDFW7cVaJqf2NJpXj-yWTro_TUB0kkK
73. Zander, V., & Gustafsson, C. (2023). Implementation of welfare technology: a systematic review of barriers and facilitators. From Taylor and Francis: https://www.tandfonline.com/doi/abs/10.1080/17483107.2021.1938707
74. Zulueta, M. C. E., Sagun, A. T., Hero, J. L., Gloria, D. S., Tongol, J. C. L., Cruz, A. C. D., Sr, Cajurao, G. V., & Cabrera, W. C. (2021). Mastering Innovations in the Lens of Information and Communications Technology (ICT) Competence and Practices of 21st Century Filipino Teachers: A Comparison among Thailand, Vietnam, and the Philippines. https://ejournals.ph/article.php?id=16787