Linking the Teachers' Technological Capacity on the Integration of ICT among the Schools in the Division of Laguna: Basis for Technological Upskilling Program for Teachers

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Abstract

This study explores the relationship between the technological capacity of teachers and the integration of Information and Communication Technology (ICT) in schools in the Division of Laguna. The research aimed to assess the level of technological competence among teachers, the readiness of schools to integrate ICT, and the adoption of ICT strategies in schools. The study used purposive sampling to select public school teachers from five municipalities in Laguna. Data were collected through a survey questionnaire and analyzed using mean, standard deviation, T-Test, Pearson-r Correlation, and ANOVA. Results show that most teachers in the sample population were relatively young and had completed college education, while the majority were junior high school teachers. There were significant differences in the ICT integration among teachers at different levels of schooling, as well as based on age, civil status, educational attainment, and trainings attended. These findings suggest the need for a technological upskilling program tailored to the specific needs of teachers at different levels of schooling. The study also revealed that technological competence among teachers is essential for the effective integration of ICT in schools. Thus, there is a need for a technological upskilling program for teachers, especially for those who are less prepared and less familiar with ICT. The significant differences in ICT integration across the three levels of schooling imply that teachers at different levels of schooling may have varying levels of preparedness and familiarity with ICT. Overall, this study provides insights into the factors that influence the integration of ICT in schools and contributes to the design of technological upskilling programs for teachers.

Keywords: TPACK, ICT integration, technological capacity, teachers, school readiness, teacher readiness

Introduction

Technology is becoming increasingly integrated into our daily lives, especially in education where it can be used in many ways to support teaching and learning. Successful integration of information and communications technology (ICT) in education depends on actions taken at the school level, such as developing an ICT plan, providing support, and training. However, simply introducing ICT equipment does not guarantee positive change. Teachers play a crucial role in facilitating ICT integration, but reports suggest that many lack the necessary knowledge and experience. This paper investigates the levels of teachers' technological, pedagogical, and content knowledge (TPACK) in the Division of Laguna and how it relates to their readiness in ICT. Results from this study will inform a technological upskilling program for teachers. This paper also sought to determine the following:

1. What is the profile of the teachers with regards to:
   1.1. Age;
   1.2. Sex;
   1.3. Civil Status;

1.4. Educational Attainment;
1.5. Level (Elem/JHS/SHS);
1.6. Types of Technological Trainings Attended?
2. What is the level of the teachers' Technological, Pedagogical, Content Knowledge?
3. What is the extent of ICT Integration relative to:
3.1. School Readiness;
3.2. Teacher Readiness;
3.3. Integration of Suitable Resources;
3.4. Utilization of ICT Infrastructure;
3.5. Innovation of Educational Resources; and
3.6. Adoption of ICT Strategies?
4. Are there significant differences in the ICT integration of the respondents when grouped according to level?
5. Does the profile of the teachers have a significant relationship to the ICT integration?
6. Does the technological capacity of the teachers have a significant relationship on the ICT Integration?

Review of Related Literature

Technology bridges the gap between quarantine and teaching. During the second quarter of 2020, we can recall how our education sector carried out online classes. Many LGUs distributed mobile devices to students, teachers underwent training to maximize digital learning, and learning programs were added to our TV channels. In fact, the DepEd TV team aimed to produce 220 episodes weekly covering all subject areas by January 2021. Zoom has boomed not only here but also worldwide, being used as a primary tool for virtual classes. Smartphones have become essential more than just being a luxury. Digital tech during this time is a need for all.

Using a database of 30 million profiles, Zippia (2022) estimates demographics and statistics for teachers in the United States. Their estimates are verified against BLS, Census, and current job openings data for accuracy. After extensive research and analysis, Zippia's data science team found that there are over 95,144 teachers currently employed in the United States, 34.4% of all teachers are women, while 65.6% are men. The average age of an employed teacher is 46 years old. The most common ethnicity of teachers is White (69.3%), followed by Hispanic or Latino (13.6%) and Black or African American (10.0%). Teachers are most in-demand in New York, NY. The professional industry is the highest paying for teachers. New York, NY pays an annual average wage of $134,786, the highest in the US. In 2021, women earned 92% of what men earned. 15% of all teachers are LGBT. New York is the best state for teachers to live.

In the 19th century, the predominant notion was that strong subject matter knowledge was enough for teachers to be able to teach new content. However, this notion shifts with the awareness of the importance of pedagogical knowledge and knowledge of the content when it came to the early twentieth century (Thinzarkyaw, 2019). Towards the end of the twentieth century, perceptions about the knowledge of schoolteachers and teachers were recognized as the combination of content and pedagogy, as well as the pedagogical content knowledge (PCK) described by the intersection of content and pedagogy (Angeli & Valanides, 2015). However, in the twenty-first century, teaching requires considerably more than delivering subject matter knowledge to students, and student learning is considerably more than absorbing information for later retrieval.

According to the Irish Computer Society (2021), only 30% of primary teachers and 25% of post-primary teachers reported themselves to be comfortable users of ICT; fewer again felt they knew how to apply it effectively in their teaching. One contributor to the skills gap for teachers seems to be age. The Irish report found a big disparity in how much newly qualified and younger teachers are using ICT, compared to those over 35: 92% of post-primary teachers under 35 reported using computers for preparation purposes, compared with 68% of teachers over forty-five. It's not just age and lack of daily experience that puts teachers off

improving their digital skills. Resistance can be a result of a lack of a confidence or fear of using ICT for learning. Teachers often worry that their knowledge level does not match those of their 'digitally native' students. This distracts from one of the main advantages of ICT skills for educators: being able to facilitate lessons more effectively using digital technologies.

Finley (2014) inquired about how teachers can coordinate knowledge, instructional practices, and technologies to positively influence academic achievement. He emphasized that one can begin to answer this question with the Technological Pedagogical Content Knowledge Framework (TPACK), which conceptualizes the integration of "Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), and the intersection of all three. Finley (2014) added that reading about TPACK helped him understand why transforming instruction with technology is important and must be done by schools as soon as possible.

For Priyankatiwari (2018), ICT can improve education quality in several ways, including by boosting learner motivation and engagement, enabling the acquisition of fundamental skills, and improving teacher preparation. When properly applied, ICT are also transformational instruments that can support the move to a learner-centered environment. Additionally, the mere presence of ICTs does not, by itself, alter how teachers perform their craft. However, with the right combination of enabling factors in place, ICT can help teachers change the way they educate. The way teachers utilize ICT is influenced by their pedagogical strategies and thinking, and how they use ICT affects student achievement.

According to Paniagua (2018), when it comes to innovative practice, there are many documented examples of innovative practice that teachers can turn to; however, to simply direct teachers to a set of tools and techniques would not necessarily be the best way to help them innovate in the classroom. Every situation is unique, and it is not always clear how such tools can be adapted in practice. A new OECD report, "Teachers as Designers of Learning Environments: the Importance of Innovative Pedagogies", takes a different approach. Rather than viewing teachers as technicians who adopt tools to improve the learning outcomes of their students, the report sees them as competent professionals who can find solutions to new problems. If the main challenge in educational practice is to meet the diverse needs of every student, then teaching needs to be acknowledged as a problem-solving process rooted in teacher professionalism.

For Lawrence & Tar (2018), the adoption and integration of ICT into teaching and learning environment provides more opportunities for teachers and students to work better in a globalized digital age. ICT has the potential to play an increasingly important role in education be it in classroom, administration and online instruction or other activities. There is tremendous potential for teachers and students to harness the power of ICT to improve the quality of teaching and learning in the classroom. It provides opportunities for greater flexibility, interactivity, and accessibility for engaging teaching and learning at the individual, group, and societal levels.

Prasojo et al (2019) investigated secondary school teachers' perceptions on barriers regarding the Information and Communication Technology (ICT) integration in a developing country, Indonesia. For the quantitative phase, they administered a survey instrument to 250 Indonesian secondary school teachers. The findings revealed that the most highly identified barriers are teachers' knowledge of ICT, funding for ICT, traditional teaching style, professional development, as well as district and school culture. Recommendations are offered for the improvement of technology integration for educational purpose.

Thompson, Petrosino, & Whiteside (2013) found that there were gender differences in teachers' perceptions of their technological skills, with male teachers reporting higher levels of confidence and skill in using technology compared to female teachers. Additionally, male teachers were more likely to incorporate technology in their teaching compared to female teachers. The authors suggest that this could be due to socialization and cultural factors that result in different attitudes and experiences towards technology for males and females. These findings suggest that gender is an important factor to consider when developing strategies to promote the integration of ICT in teaching and learning, and that there may be a need for targeted interventions to support female teachers in upskilling their technological capacity and confidence.

Lastly, Gbenga et al. (2020) investigated the impact of teachers' technological capacity on their integration of ICT in teaching and learning. The study utilized a survey questionnaire to collect data from 200

secondary school teachers in Nigeria. The results showed that teachers with higher levels of technological capacity were more likely to integrate ICT in their teaching and learning activities. The study concluded that teachers' technological capacity is a critical factor in promoting effective ICT integration in education.

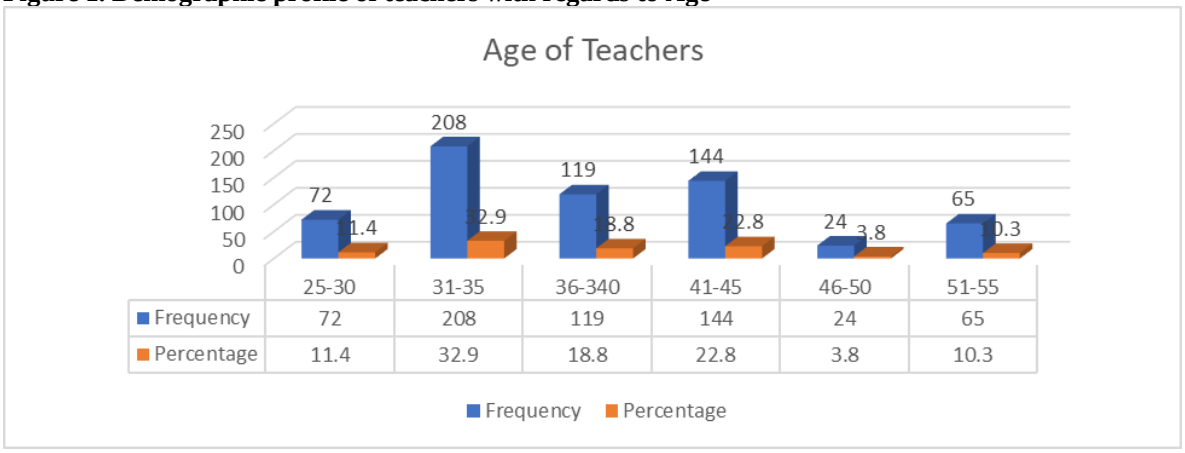
To summarize, these literatures examine the relationship between teachers' characteristics and their integration of technology in teaching. The studies suggest that younger teachers, female teachers, and single teachers are more likely to integrate ICT in their teaching compared to older, female, and married teachers. Additionally, higher levels of education, such as master's or doctoral degrees, are positively related to students' attitudes towards ICT and their technological competences. Teacher training programs tailored to teachers' needs, ongoing support, and resources can effectively enhance technology integration in the classroom. Teachers' technological pedagogical content knowledge (TPACK) positively affects their adoption and integration of technology in teaching, and training and support are crucial in enhancing teachers' TPACK and attitudes toward technology. However, some teachers face challenges in integrating technology in their lessons due to various barriers such as lack of access to technology and inadequate training. Therefore, the findings suggest the need for targeted interventions to support teachers in upskilling their technological capacity and to provide adequate support and resources for teacher development.

Methodology

This study used a descriptive research design to investigate the links between the teachers' technological capacity and the integration of ICT among the schools in the Division of Laguna. The study used purposive sampling to select one representative school from elementary, junior high school, and senior high school levels from each of the municipalities of Pagsanjan, Pila, Victoria, Santa Cruz, and Bay. Purposive sampling was used to select the respondents, and an online request letter was sent to invite them to participate in the study. The study collected data through a survey questionnaire, and the data was analyzed using various statistical treatments. Mean was used to determine the profile of the teachers, while mean and standard deviation were used to determine the mean level of the teachers' technological capacity as measured by the Technological, Pedagogical, Content Knowledge (TPACK) and the ICT integration. T-Test was used to determine if there were significant differences in the ICT integration of the respondents when grouped according to level. Pearson-r Correlation was used to determine if the profile of the teachers had a significant relationship with ICT integration, and if the technological capacity of the teachers had a significant relationship with ICT integration. The hypotheses were tested using 0.05 level of significance. The statistical software and spreadsheet applications were used to compute and validate the results. The collection of data took seven weeks, and one week was allocated for the analysis of findings, documentation, and interpretation.

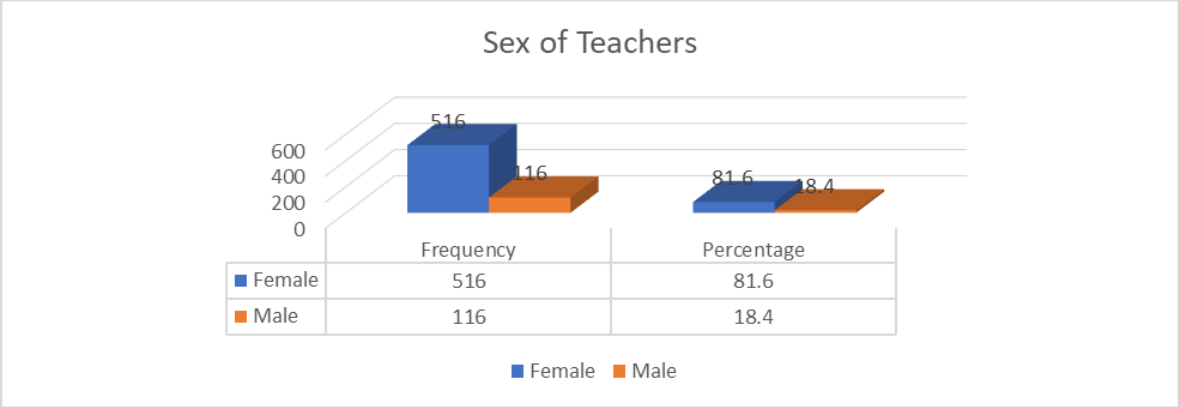
Result and Discussion

Figure 1. Demographic profile of teachers with regards to Age



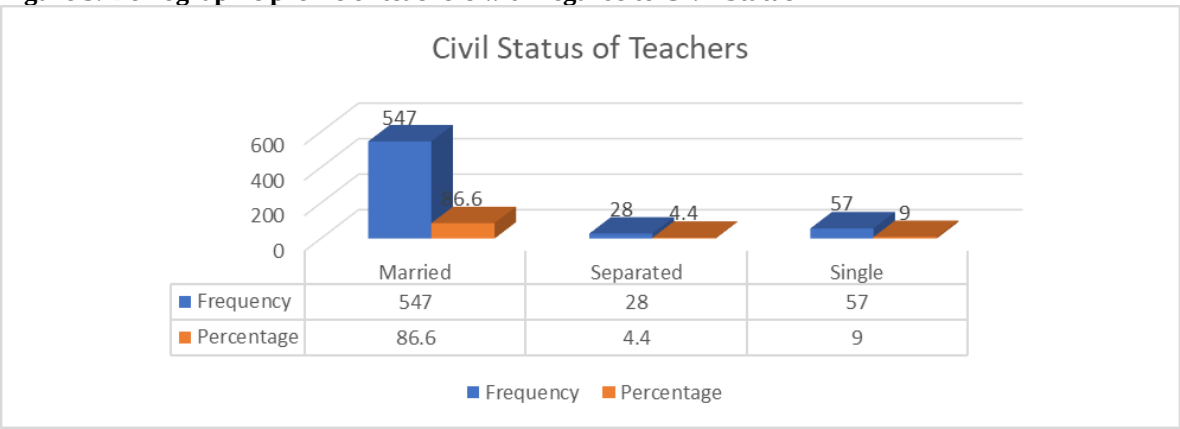
Out of 632 teachers, the age range "31 to 35 years old" received the highest frequency of two hundred eight (208) or 32.9% of the total sample population. Followed by the age range "41 to 45 years old" with frequency of one hundred forty-four (144) or 22.8% of the total sample population. While the age range "46 to 50 years old" received the lowest frequency of twenty-four (24) or 3.8% of the total sample population. This implies that most teachers in the sample population were relatively young, with the age range of 31 to 35 years old having the highest frequency.

Figure 2. Demographic profile of teachers with regards to Sex



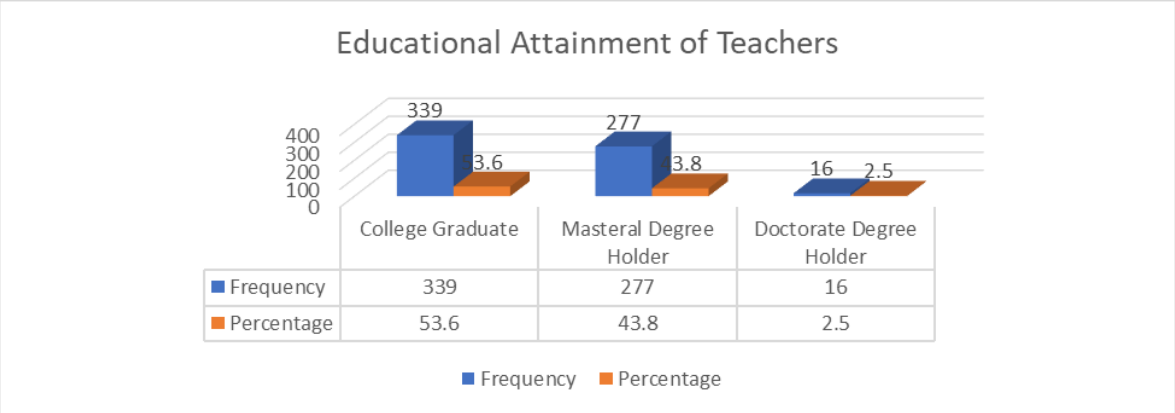
Out of 632 teachers, the "female" received the highest frequency of five hundred sixteen (516) or 81.6% of the total sample population. While the "male" received the lowest frequency of one hundred sixteen (116) or 18.4% of the total sample population. This means that the majority of teachers in the sample population were female, with 81.6% of the total sample population being female. This suggests that any technological upskilling program for teachers in the Division of Laguna should consider the gender differences in technological capacity and experience among the sample population.

Figure 3. Demographic profile of teachers with regards to Civil Status



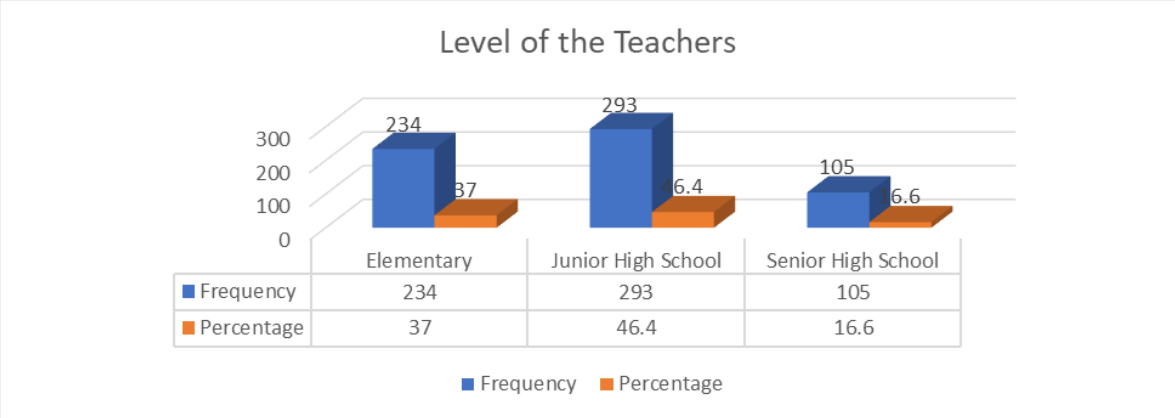
Out of 632 teachers, the "married status" received the highest frequency of five hundred forty-seven (547) or 86.6% of the total sample population. Followed by the "single status" with frequency of one fifty-seven (57) or 9% of the total sample population. While the "separated status" received the lowest frequency of twenty-eight (28) or 4.4% of the total sample population. This means that the majority of teachers in the sample population were married.

Figure 4. Demographic profile of teachers with regards to Educational Attainment



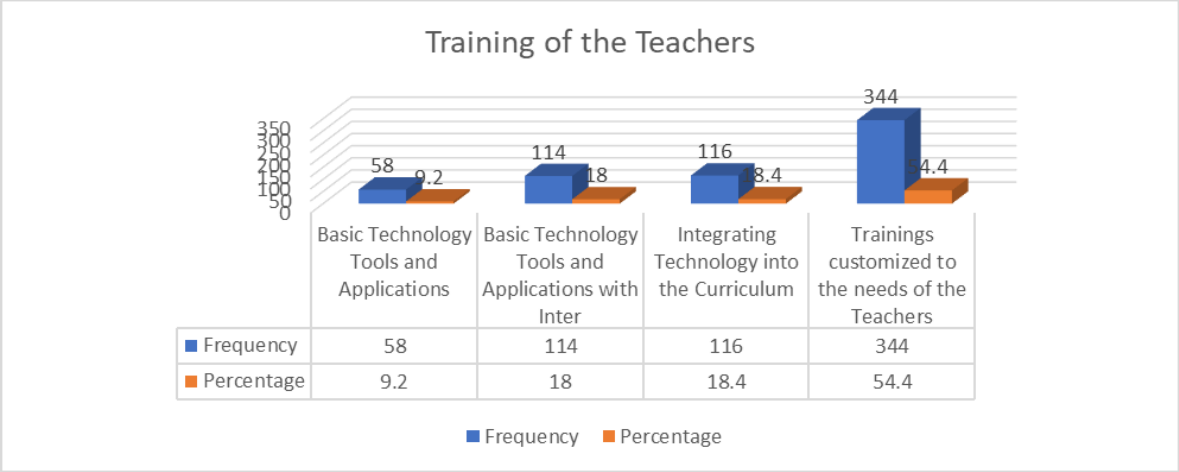
Out of 632 teachers, the "college graduate" received the highest frequency of three hundred thirty-nine (339) or 53.6% of the total sample population. Followed by the "masteral degree holder" with frequency of two hundred seventy-seven (277) or 43.8% of the total sample population. While the "doctorate degree holder" received the lowest frequency of sixteen (16) or 2.5% of the total sample population. This means that the majority of teachers in the sample population had completed only up to a bachelor's degree, with only a small percentage having attained higher levels of education such as a master's or doctorate degree.

Figure 5. Demographic profile of teachers with regards to Level



Out of 632 teachers, the "junior high school level" received the highest frequency of 293 or 46.4% of the total sample population. Followed by the "elementary level" with frequency of 234 or 37%of the total sample population. While the "senior high school level" received the lowest frequency of one hundred five (105) or 16.6% of the total sample population. The results indicate that a significant portion of the sample population were teachers in the junior high school level, followed closely by teachers in the elementary level.

Figure 6. Demographic profile of teachers with regards to Training



Out of 632 teachers, the "trainings customized to the needs of the teachers" received the highest frequency of three hundred forty-four (344) or 54.5% of the total sample population. Followed by the "integrating technology into the curriculum" with frequency of one hundred sixteen (116) or 18.4% of the total sample population. While the "basic technology tools and applications" received the lowest frequency of fifty-eight (58) or 9.2% of the total sample population. This means that a significant number of teachers in the sample population have received customized training to meet their specific needs, indicating a recognition of the importance of tailored professional development. However, the relatively low frequency of teachers who received training on basic technology tools and applications may suggest a need for further support in this area, as proficiency in basic technology skills is increasingly important in today's digital age. Furthermore, the high frequency of teachers who received training on integrating technology into the curriculum highlights the importance of preparing teachers to effectively use technology to enhance student learning outcomes

Table 1. Level of Teachers' Technological Capacity in terms of Technological, Pedagogical Content Knowledge

STATEMENTS	MEAN	SD	REMARKS
Integrating appropriate instructional methods and technologies into a content area.	4.09	.79	Agree
Selecting contemporary strategies and technologies helping to teach my content effectively.	3.95	.88	Agree
Teaching successfully by combining my content, pedagogy, and technology knowledge.	4.18	.72	Agree
Taking a leadership role among my colleagues in the integration of content, pedagogy, and technology knowledge.	4.13	.63	Agree
Teaching a subject with different instructional strategies and computer applications.	4.09	.63	Agree
Weighted Mean		4.18	
SD		0.49	
Verbal Interpretation		Agree	

From the statements above, "Teaching successfully by combining my content, pedagogy, and technology knowledge" yielded the highest mean score (M=4.18, SD=0.72) and was remarked as Agree. This is followed by "Taking a leadership role among my colleagues in the integration of content, pedagogy, and technology knowledge" with a mean score (M=4.18, SD=0.72) was also remarked as Agree. On the other

hand, the statement "Selecting contemporary strategies and technologies helping to teach my content effectively" received the lowest mean score of responses with (M=3.95, SD=0.88) yet was also remarked Agree.

The level of Teachers' Technological Capacity in terms Technological, Pedagogical, Content Knowledge attained a weighted mean score of 4.18 and a standard deviation of 0.49 and was Agree among the respondents. This indicates there is a high level of technological capacity among the respondents. The teachers demonstrated the ability to integrate appropriate instructional methods and technologies into their content area and to teach a subject with different instructional strategies and computer applications.

Table 2. Extent of ICT Integration relative to School Readiness

STATEMENTS	MEAN	SD	REMARKS
Teachers seamlessly integrate technology in a student-centered learning environment where technology is used to solve real world problems in collaboration with business, industry, and higher education.	4.05	.56	Agree
Most teachers and students have on-demand access to appropriate technology and digital resources anytime/anywhere for technology integrated curriculum activities on the campus, in the district, at home, or key locations in the community.	4.09	.60	Agree
Most teachers and students seamlessly apply technology across all subject areas to provide learning opportunities beyond the classroom that are not possible without the technology.	4.09	.60	Agree
Most teachers use technology for basic skills with little or no connections with content objectives.	4.19	.58	Agree
Teachers are knowledgeable of and seamlessly integrate the technology applications as appropriate for content area and grade level.	4.12	.58	Agree
Within each grade level, technology applications are mastered by 86 to 100% of the students.	4.05	.71	Agree
Most teachers create and integrate web-based lessons which include online technology applications-based content, resources, learning activities, and interactive communications that support learning objectives throughout the curriculum.	3.91	.67	Agree
Most teachers participate in or mentor others in the development of strategies for creating new learning environments that empower students to think critically to solve real-world problems and collaborate with experts across business, industry, and higher education.	3.91	.67	Agree
Our school promotes anytime, anywhere learning available through a variety of delivery systems including individually guided activities, inquiry/action research, and involvement in a developmental/improvement process.	4.05	.64	Agree
Most teachers on our school demonstrate proper netiquette while online.	3.68	.87	Agree
30 or more hours of technology professional development available per year school year for all teachers.	3.86	.70	Agree
Most teachers create new interactive, collaborative, customized learning environments.	3.92	.64	Agree
Most teachers customize online content and have taught or are teaching content units or courses online.	4.04	.71	Agree
My school leadership promotes a shared vision with policies that encourage continuous innovation with technology leading to increased student achievement.	4.14	.69	Agree
Our school leadership team has a collaborative, technology-rich School Improvement Plan (SIP) that is grounded in research and aligned with the division strategic plan that is focused on student success	3.82	.65	Agree
I facilitate and support the use of technologies in our school to enhance instructional methods that develop higher-level thinking, decision-making	3.91	.74	Agree
Our school uses a variety of media and formats, including telecommunications and the school website to communicate, interact, and collaborate with all education stakeholders	3.77	.74	Agree
Our school's discretionary funds and other resources are allocated to advance implementation of all the technology strategies to meet the goals and objectives outlined in the School Improvement Plan (SIP).	3.98	.62	Agree

Online learning is facilitated and supported through professional development and integrated into the School Improvement Plan (SIP).	4.18	.65	Agree
All students have 1 to 1 access to internet-connected multimedia computers when needed.	4.04	.56	Agree
Weighted Mean	3.81		
SD	0.79		
Verbal Interpretation	Agree		

From the statements above, "Most teachers use technology for basic skills with little or no connections with content objectives." yielded the highest mean score (M=4.19, SD=0.58) was remarked as Agree. This is followed by "Online learning is facilitated and supported through professional development and integrated into the School Improvement Plan (SIP)." with a mean score (M=4.18, SD=0.65) was also remarked as Agree. On the other hand, the statement "Our school uses a variety of media and formats, including telecommunications and the school website to communicate, interact, and collaborate with all education stakeholders" received the lowest mean score of responses with (M=3.77, SD=0.74) was remarked Agree. The extent of ICT Integration relative to School Readiness attained a weighted mean score of 3.81 and a standard deviation of 0.79 was Agree among the respondents. This means that the respondents agree that technology is being integrated into the school environment to enhance student learning. However, there is still room for improvement, particularly in terms of ensuring that technology is being used in a way that supports content objectives rather than just basic skills. Additionally, the results suggest that online learning is an important aspect of technology integration and should be supported through professional development and integrated into the School Improvement Plan. The lower mean score for the statement about using a variety of media and formats for communication highlights the need for schools to continue to explore ways to effectively communicate and collaborate with education stakeholders using technology.

Table 3. Extent of ICT Integration relative to Teacher Readiness

STATEMENTS	MEAN	SD	REMARKS
My classroom is a student-centered learning environment where technology is seamlessly integrated to solve real world problems in collaboration with business, industry, and higher education.	3.00	.95	Neutral
Learning is transformed as my students propose, assess, and implement solutions to problems.	3.36	1.07	Neutral
My students and I have on-demand access to all appropriate technology and digital resources anytime/anywhere for technology integrated curriculum activities on the campus, in the district, at home, or key locations in the community.	3.05	1.07	Neutral
My students and I seamlessly apply technology across all subject areas to provide learning opportunities beyond the classroom that are not possible without the technology.	3.18	1.08	Neutral
I seamlessly integrate technology applications in collaborative, cross-curricular units of instruction.	3.06	.99	Neutral
86 to 100% of my students have mastered the use of technology applications.	3.91	.85	Agree
I have created and integrated web-based lessons which include online technology-based content, resources, learning activities, and interactive communications that support learning objectives throughout the curriculum.	3.91	.73	Agree
I collaborate with other professionals in the development of new learning environments which empowers students to think critically to solve real-world problems and communicate with experts across business, industry, and higher education.	3.68	.76	Agree
I actively participate in multiple professional opportunities that support anytime, anywhere learning available through delivery systems including Individually guided activities, inquiries/research, and involvement in a developmental/improvement process.	3.86	.70	Agree
I always demonstrate proper netiquette.	3.32	1.18	Neutral
I participate in 30 or more hours of technology professional development per year.	3.68	.88	Agree
I create new, collaborative, and customized learning environments.	3.70	.72	Neutral
I have participated in professional development to create and integrate web-based lessons	4.09	.70	Agree

or to teach content units or courses online.			
We promote a shared vision with policies that encourage continuous innovation with technology leading to increased student achievement.	4.27	.62	Agree
My school leadership team has a collaborative, technology-rich school improvement plan (SIP) that is grounded in research and aligned with the district strategic plan that is focused on student access.	3.78	.79	Agree
Our leaders and teacher cadres facilitate and support my use of technologies to enhance instructional methods that develop higher-level thinking, decision-making, and problem-solving skills.	3.91	.67	Agree
At my school, a variety of media and formats, including telecommunications and the school website (FB Page/Groups, Instagram, Twitter) are used to communicate and collaborate with all education stakeholders.	3.86	.69	Agree
School discretionary funds and other resources are allocated to advance implementation of all the technology strategies to meet the goals and objectives outlines in the school improvement plan	3.98	.60	Agree
My school leadership facilitates my use of online learning and supports my use with professional development.	4.26	.75	Agree
There is 1-to-1 access to Internet-connected multimedia computers available in my classroom for all my students when needed.	3.95	.83	Agree
Weighted Mean **SD** **Verbal Interpretation**	3.79 0.85 Agree		

From the statements above, “We promote a shared vision with policies that encourage continuous innovation with technology leading to increased student achievement.” yielded the highest mean score (M=4.27, SD=0. 26) was remarked as Agree. This is followed by “My school leadership facilitates my use of online learning and supports my use with professional development” with a mean score (M=4.26, SD=0.75) was also remarked as Agree. On the other hand, the statement “My classroom is a student-centered learning environment where technology is seamlessly integrated to solve real world problems in collaboration with business, industry, and higher education.” received the lowest mean score of responses with (M=3.00, SD=0.95) was remarked Neutral.

The extent of ICT Integration relative to Teacher Readiness attained a weighted mean score of 3.97 and a standard deviation of 0.85 was Agree among the respondents. This means that that teachers who have access to technology and digital resources, are proficient in using technology applications and participate in regular professional development opportunities, are more likely to integrate technology effectively in their teaching. Furthermore, the study found that a shared vision for ICT integration and school leadership support in the form of collaborative school improvement plans and resource allocation are key factors in promoting successful ICT integration in classrooms.

Table 4. Extent of ICT Integration relative to Teacher Readiness

STATEMENTS	MEAN	SD	REMARKS
I plan and design teaching-*learning activities to foster students' engagement.*	3.95	.88	Agree
I develop new or modifying existing digital and/or non-digital learning resources.	4.00	.74	Agree
I use the Internet or web to obtain information for instructional purposes.	4.18	.65	Agree
I process assessment and evaluate data and reports of students' progress and achievement.	4.27	.75	Agree
I use ICT tools and resources to improve the efficiency of my professional practices.	4.15	.51	Agree
I practice social responsibility, ethical and legal use of ICT tools and resources.	4.36	.64	Agree
I use ICT resources for communication and research undertakings.	4.14	.55	Agree
I use ICT Resources to further my technological advancements.	4.32	.56	Agree
I use email to foster communication with other teachers, students, parents, and other stakeholders.	4.09	.70	Agree
I use subject-specific software and participate in an online interactive discussion or bulletin	4.09	.60	Agree

board with students.

Weighted Mean	4.18
SD	0.58
Verbal Interpretation	Agree

From the statements above, "I practice social responsibility, ethical and legal use of ICT tools and resources" yielded the highest mean score (M=4.36, SD=0.64) was remarked as Agree. This is followed by "I use ICT Resources to further my technological advancements" with a mean score (M=4.32, SD=0.56) was also remarked as Agree. On the other hand, the statement "I plan and design teaching-learning activities to foster students' engagement" received the lowest mean score of responses with (M=3.95, SD=0.88) was remarked Agree.

The extent of ICT Integration relative to Integration of Suitable Resources attained a weighted mean score of 4.18 and a standard deviation of 0.58 was Agree among the respondents. The findings emphasize the importance of providing teachers with access to technology and digital resources, proficiency in using technology applications, and regular professional development opportunities to promote successful ICT integration in classrooms. Moreover, collaborative school improvement plans and resource allocation can further support ICT integration and help create student-centered learning environments that incorporate technology to solve real-world problems.

Table 5. Extent of ICT Integration relative to Utilization of ICT Infrastructure

STATEMENTS	MEAN	SD	REMARKS
Laptop is used for lesson preparations to create and present multimedia shows.	3.46	1.12	Neutral
Personal or hand-held computers are used as personal organizers to manage files for delivering instruction.	3.55	.89	Agree
Interactive boards are used for delivering presentations to share digital files related to the course.	3.05	1.23	Neutral
Printers are networked for utilization in the classrooms, schools, or workstations.	3.00	.95	Neutral
Projectors/ Televisions are used during class discussions and demonstrations to provide supplementary content materials.	3.31	.95	Neutral
Web or internet is used to look up reference information, to access portal and course, and to send and receive e-mail, and build and maintain websites.	4.50	.66	Strongly Agree
Digital cameras are used to manage digital photos, and to share photographs and other digital materials.	4.45	.66	Agree
Scanners are used to manage documents needed in delivering instruction through organizing files in digital format.	3.59	1.16	Agree
Audio and video resources are used to create, edit, and present audios and videos, and to access online audio/video recordings of lectures.	4.09	.90	Agree
Browser phones are used to access web-based services information and/or utilized for instant messaging/chat on the web to communicate/collaborate with other students in the course.	4.41	.58	Agree
Weighted Mean	4.05		
SD	0.64		
Verbal Interpretation	Agree		

From the statements above, "Web or internet is used to look up reference information, to access portal and course, and to send and receive e-mail, and build and maintain websites" yielded the highest mean score (M=4.50, SD=0.66) was remarked as Strongly Agree. This is followed by "Digital cameras are used to manage digital photos, and to share photographs and other digital materials" with a mean score (M=4.45, SD=0.66) was remarked as Agree. On the other hand, the statement "Printers are networked for utilization in the classrooms, schools, or workstations" received the lowest mean score of responses with (M=3.00, SD=0.95) was remarked Neutral.

The extent of ICT Integration relative to Utilization of ICT Infrastructure attained a weighted mean score of 4.05 and a standard deviation of 0.64 was Agree among the respondents. The results indicate that

teachers are most inclined to use the internet for various purposes such as reference information, accessing course portals, sending, and receiving emails, and building and maintaining websites.

Table 6. Extent of ICT Integration relative to Innovation of Educational Resources

STATEMENTS	MEAN	SD	REMARKS
I innovate using ICT because it enables me to accomplish my tasks more quickly.	4.32	.63	Agree
I innovate using ICT because it improves the quality of my teaching job.	4.23	.60	Agree
I innovate using ICT because it improves my job performance.	4.18	.65	Agree
I innovate using ICT because it helps me increase my performance in the IPCRF.	3.82	.78	Agree
I innovate using ICT because it gives me greater control over my work.	4.17	.49	Agree
I innovate using ICT because it increases my productivity.	4.50	.59	Strongly Agree
I innovate using ICT because it enhances my effectiveness on the job.	4.41	.58	Agree
I innovate using ICT because it helps me create a better learning environment for my students.	4.36	.64	Agree
I innovate using ICT because it helps me eliminate the issues and problems I encounter with my classroom.	4.36	.57	Agree
I innovate using ICT because it is required.	4.41	.58	Agree
Weighted Mean	4.41		
SD	0.58		
Verbal Interpretation	Agree		

From the statements above, “I innovate using ICT because it increases my productivity” yielded the highest mean score (M=4.50, SD=0.59) was remarked as Strongly Agree. This is followed by “I innovate using ICT because it enhances my effectiveness on the job” and “I innovate using ICT because it is required” with a mean score (M=4.41, SD=0.58) was both remarked as Agree. On the other hand, the statement “I innovate using ICT because it helps me increase my performance in the IPCRF” received the lowest mean score of responses with (M=3.82, SD=0.78) was remarked Agree.

The extent of ICT Integration relative to Innovation of Educational Resources attained a weighted mean score of 4.41 and a standard deviation of 0.58 was Agree among the respondents. The results indicate that teachers value ICT as a means of improving the quality of their teaching and creating a better learning environment for their students.

Table 7. Extent of ICT Integration relative to Adoption of ICT Strategies

STATEMENTS	MEAN	SD	REMARKS
I adopt ICT strategies because I find it very interesting to the students.	4.36	.71	Agree
I find the educational resources on the LRMDS portal of DepEd useful and easy to use.	4.27	.75	Agree
I don’t usually adopt ICT strategies as it is not easy for me to become more skillful in using it in my teaching.	4.32	.76	Agree
I adopt ICT-related strategies because it offers real advantages over traditional methods of teaching.	4.18	.72	Agree
I use ICT teaching strategies because I like using computers for my teaching process.	4.35	.60	Agree
I adopt ICT teaching strategies because I think it must and should be.	4.23	.85	Agree
I adopt ICT teaching strategies because it can be easily accessed all over the internet, just like buying instant noodles.	4.13	.82	Agree
I use ICT-related teaching strategies because I think computers can be effectively used as instructional tools.	3.36	1.11	Neutral
I think all teachers should use ICT tools in all subject matters.	4.27	.75	Agree
I use ICT in my teaching because I think that it fits well with the way I like to work.	4.27	.7	Agree

	5
Weighted Mean	4.17
SD	0.62
Verbal Interpretation	Agree

From the statements above, "I adopt ICT strategies because I find it very interesting to the students" yielded the highest mean score (M=4.36, SD=0.71) was remarked as Agree. This is followed by "I use ICT teaching strategies because I like using computers for my teaching process" with a mean score (M=4.35, SD=0.60) was remarked as Agree. On the other hand, the statement "I use ICT-related teaching strategies because I think computers can be effectively used as instructional tools" received the lowest mean score of responses with (M=3.36, SD=1.11) was remarked Neutral.

The extent of ICT Integration relative to Adoption of ICT Strategies attained a weighted mean score of 4.17 and a standard deviation of 0.62 was Agree among the respondents. This indicates that teachers recognize the potential benefits of using ICT in education, such as increased student engagement and more efficient teaching methods.

Table 8. Test of Significant difference in the ICT Integration when grouped according to level.

ICT Integration	Level	F-value	p-value	Analysis
School Readiness	Elementary Secondary Tertiary	50.076	0.000	Significant
Teacher Readiness	Elementary Secondary Tertiary	15.616	0.000	Significant
Utilization of ICT Infrastructure	Elementary Secondary Tertiary	19.154	0.000	Significant
Integration of Suitable Resources	Elementary Secondary Tertiary	28.568	0.000	Significant
Innovation of Educational Resources	Elementary Secondary Tertiary	14.509	0.000	Significant
Adoption of ICT Strategies	Elementary Secondary Tertiary	12.217	0.000	Significant

Table 8 presents the means and standard deviations of the six factors affecting ICT integration (school readiness, teacher readiness, utilization of ICT infrastructure, integration of suitable resources, innovation of educational resources, and adoption of ICT strategies) for each level of schooling. It also includes the model summary, ANOVA results, and remarks. The ANOVA results show that there is a significant difference in the ICT integration among teachers in the three levels of schooling ($p < 0.05$). Specifically, there are significant differences in school readiness, teacher readiness, and utilization of ICT infrastructure across the three levels. The significant differences suggest that teachers in different levels of schooling may have varying levels of preparedness and familiarity with ICT, which may affect their ability to integrate ICT in their teaching practices. Hence, there is enough evidence to reject the null hypothesis stating that "There is no significant difference in the ICT integration of the respondents when grouped according to level.".

Table 9. Test of Significant relationship between Teachers' Profile and ICT Integration

Teachers' Profile	ICT Integration	r value	Degree of Correlation	Analysis
Age	School Readiness	-0.231	Weak	Significant
	Teacher Readiness	0.077	Very Weak	Not Significant

	Integration of Suitable Resources	-0.207	Weak	Significant
	Utilization of ICT Infrastructure	-0.086	Very Weak	Significant
	Innovation of Educational Resources	-0.178	Very Weak	Significant
	Adoption of ICT Strategies	-0.007	Very Weak	Not Significant
Sex	School Readiness	0.092	Very Weak	Significant
	Teacher Readiness	-0.207	Weak	Significant
	Integration of Suitable Resources	-0.025	Very Weak	Not Significant
	Utilization of ICT Infrastructure	0.042	Very Weak	Not Significant
	Innovation of Educational Resources	0.170	Very Weak	Significant
	Adoption of ICT Strategies	0.069	Very Weak	Not Significant
Civil Status	School Readiness	0.048	Very Weak	Not Significant
	Teacher Readiness	-0.139	Very Weak	Significant
	Integration of Suitable Resources	0.028	Very Weak	Not Significant
	Utilization of ICT Infrastructure	-0.056	Very Weak	Not Significant
	Innovation of Educational Resources	0.126	Very Weak	Significant
	Adoption of ICT Strategies	0.024	Very Weak	Not Significant
Educational Attainment	School Readiness	-0.241	Weak	Significant
	Teacher Readiness	-0.364	Very Weak	Significant
	Integration of Suitable Resources	0.147	Very Weak	Significant
	Utilization of ICT Infrastructure	-0.088	Very Weak	Significant
	Innovation of Educational Resources	0.126	Very Weak	Significant
	Adoption of ICT Strategies	-0.140	Very Weak	Significant
Level	School Readiness	0.121	Very Weak	Not Significant
	Teacher Readiness	0.046	Very Weak	Not Significant
	Integration of Suitable Resources	0.021	Very Weak	Significant
	Utilization of ICT Infrastructure	0.039	Very Weak	Not Significant
	Innovation of Educational Resources	-0.003	Very Weak	Not Significant
	Adoption of ICT Strategies	0.012	Very Weak	Not Significant

Scale	**Strength**
0.80 – 1.00	Very Strong
0.60 – 0.79	Strong
0.40 – 0.59	Moderate
0.20 – 0.39	Weak
0.00 – 0.19	Very Weak

Table 9 shows that there are significant differences in the ICT integration based on age, civil status, educational attainment, and trainings attended. Teachers who are younger (25-30 years old) and have higher educational attainment (college graduate) tend to have higher ICT integration scores. Similarly, those who have attended basic technology tools and applications trainings, or customized trainings also tend to have higher ICT integration scores. On the other hand, sex and level do not significantly affect ICT integration scores. While civil status is also found to be significant, further analysis is needed to understand the relationship between civil status and ICT integration. In general, the findings suggest that age, educational attainment, and training are important factors to consider in promoting ICT integration among teachers. Hence, the null hypothesis stating that "The profile of the teachers has no significant relationship to the ICT integration." has been partially rejected.

Table 10. Test of Significant relationship between technological capacity and ICT Integration

Technological, Pedagogical, Content Knowledge	School Readiness	0.325	Weak	Significant
	Teacher Readiness	0.313	Weak	Significant
	Integration of Suitable Resources	0.414	Moderate	Significant
	Utilization of ICT Infrastructure	0.367	Weak	Significant

Innovation of Educational Resources	0.221	Weak	Significant
Adoption of ICT Strategies	0.376	Weak	Significant

Scale	Strength
0.80 – 1.00	Very Strong
0.60 – 0.79	Strong
0.40 – 0.59	Moderate
0.20 – 0.39	Weak
0.00 – 0.19	Very Weak

Table 10 shows that there is a significant relationship between technological capacity and ICT integration. The F-value of 1109.9 is highly significant with a p-value of 0.000, indicating that there is a strong association between these two variables. The model summary shows that 63.79% of the variance in ICT integration can be explained by technological capacity, indicating that technological capacity is an important factor in predicting the level of ICT integration among teachers. Generally, the findings suggest that teachers who have a higher technological capacity tend to have higher levels of ICT integration. Therefore, it is important for teachers to have access to and be proficient in using technology in order to promote effective ICT integration in the classroom. Hence, there is enough evidence to reject the null hypothesis stating, “The technological capacity of the teachers has no significant relationship on the ICT Integration.”.

CONCLUSION

The significant difference in the ICT integration among teachers in the three levels of schooling indicates that teachers in different levels of schooling have varying levels of preparedness and familiarity with ICT, which may affect their ability to integrate ICT in their teaching practices. Specifically, there are significant differences in school readiness, teacher readiness, and utilization of ICT infrastructure across the three levels. These findings highlight the need for targeted interventions and support for teachers at different levels of schooling to improve their technological capacity and ICT integration skills. Therefore, the null hypothesis stating that there is no significant difference in the ICT integration of the respondents when grouped according to level is rejected.

The significant differences in the ICT integration scores of teachers based on their age, civil status, educational attainment, and trainings attended suggest that younger teachers, those with higher educational attainment, and those who have attended basic technology tools and applications trainings, or customized trainings tend to have higher ICT integration scores. While sex and level do not significantly affect ICT integration scores, civil status is found to be significant, but further analysis is needed to understand the relationship between the two.

Lastly, teachers who have a higher technological capacity tend to have higher levels of ICT integration, indicating that access to and proficiency in technology are important factors in promoting effective ICT integration in the classroom. The model summary shows that 63.79% of the variance in ICT integration can be explained by technological capacity, which highlights the importance of technological proficiency in predicting the level of ICT integration among teachers. Therefore, the null hypothesis stating that there is no significant relationship between technological capacity and ICT integration is rejected. These findings emphasize the need for teachers to continually enhance their technological capacity to promote effective ICT integration in the classroom.

RECOMMENDATIONS

1. It is recommended that schools and educational institutions provide targeted training programs for teachers who are older, have lower educational attainment, and have not attended any technology-focused trainings to improve their ICT integration skills. Such training programs should also focus on addressing the needs of teachers who are married or have family

responsibilities. Additionally, it may be useful to explore the reasons behind the observed differences in ICT integration scores based on civil status, which could inform the development of interventions that specifically address the needs of teachers in this group. Overall, efforts should be made to ensure that all teachers have access to the necessary resources and training programs to improve their technological capacity and effectively integrate ICT in their teaching practices.

2. It is also recommended that educational institutions prioritize the development of their teachers' technological capacity to effectively integrate ICT in the classroom. This can be achieved through providing targeted professional development opportunities such as technology-specific trainings and workshops that cater to the varying levels of technological proficiency among teachers. Furthermore, institutions can also provide access to technology tools and applications that can aid in enhancing the technological capacity of their teachers. In addition, it is important to recognize that age, civil status, educational attainment, and previous trainings attended have significant effects on ICT integration. Therefore, institutions can also consider implementing targeted interventions and support for teachers based on these factors to promote more effective ICT integration.
3. Further studies be conducted with a larger and more diverse sample population to ensure the generalizability of the findings. Researchers could investigate the factors that contribute to the differences in ICT integration across different levels of schooling to identify targeted interventions that can improve the technological capacity of teachers.

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