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Competency Level in Information and Communications Technology (ICT) of Teachers: Basis for a Technological, Pedagogical and Content Knowledge (TPACK) Readiness Training Program

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ABSTRACT

The study is aimed at determining the level of competence of information and communications technology (ICT) secondary teachers in the City Division of Ligao. Specifically, it is done to answer the following questions: (1) What is the demographic profile of the respondents in terms of age, sex, educational attainment, length of service, number of training attended related to ICT, and other qualifications? (2) What is the competency level of Technology and Livelihood Education (TLE)-ICT teachers in the four competency domains: technology operations and concepts, social and ethical, pedagogical, and professional domains? (3) Is there a significant relationship between the demographic profile and the competency level of the ICT teachers along the four domains? (4) What training design can be proposed based on the findings of the study? A descriptive, evaluative, and survey method of research was utilized in this study. The instrument used in this study was a survey questionnaire adapted from the National ICT Competency Standard Framework (NICS). The gathered data were interpreted and analyzed using different statistical tools such as frequency distribution, percentage technique, mean, weighted mean, Likert scale, and chi-square test for independence.

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1. INTRODUCTION

The pace of change brought about by new technologies in the market has significantly influenced and will continue to affect the way people live their lives. In the 21st century, the term "technology" is an important issue in many fields, including education. This is because technology has become the knowledge transfer highway in most countries. Technology integration nowadays has gone through innovations and transformed our societies, which has changed the way people think, work, and live (Ghavifekr & Rosdy, 2015). Information and communications technology (ICT) in education is the mode of education that uses information and communications technology to support, enhance, and optimize the delivery of information. The role of ICT teachers in the world of advanced technology is quite relevant concerning his or her role. A survey conducted in 2018 concerning the integration of ICT in primary and secondary schools by the Department of Education and Science (DES) in Ireland was not based on the level of competence. However, it examined the integration of ICT into teaching, which the researcher calls the level of expertise in this vast area. Among the ASEAN member states, Singapore was the leading country, followed by Brunei Darussalam and Malaysia.

Although the global ranking of the Philippines went down by 1 spot, its ASEAN ranking remained at rank 5, outperforming Vietnam, Indonesia, and Cambodia for both years. The Department of Education (see https://www.deped.gov.ph/2010/06/10/do-78-s-2010-guidelines-on-the-implementation-of-the-deped-computerization-program-dcp/) has been involved in various programs and projects aimed at modernizing its operations and improving the teaching and learning process in the schools. Technology and Livelihood Education (TLE) is one of the learning areas of the Secondary Education Curriculum used in Philippines secondary schools. As a subject in high school, its component areas are Home Economics, Agri-Fishery Arts, Industrial Arts, and Information and Communication Technology.

When the K to 12 Curriculum or the Enhanced Basic Education Act of 2013 (Republic Act No. 10533) was implemented, it created a massive change in the education system. The said curriculum envisions producing globally competitive students by enhancing the students' basic skills in various subjects, familiarizing them with the workplace, and preparing the graduates for future employment. In addition, one of the advantages that the new curriculum brought is to consolidate the qualifications and skills in Technical Vocational (TechVoc) for Senior High School and its associated subject TLE for Junior High School.

Specifically, the addition of Information and Communication Technology, or ICT under the subject, has allowed the students to dive into the world of computer-related activities that could equip their skills/knowledge if they opt to choose the ICT strand in Senior High School. ICT in Junior High School is offered during Grades 7-8 as part of the exploratory offerings in TLE 7/8. In Grades 9-10, it is offered as a specialized subject in preparation for Grades 11 & 12. ICT focuses on more than just computers and technology; it also develops a person's capacity for planning, evaluating, monitoring, handling difficult issues, and making decisions—skills that are essential in today's quick-paced society. To carry out this task successfully, TLE-ICT teachers need to be well-versed in information and communications technology. DepEd Order No. 78, s. 2010 Guidelines on the Implementation of the DepEd Computerization Program (DCP) state that DCP aims to provide public schools with appropriate technologies that would enhance the teaching-learning process and meet the challenges of the 21st century. To integrate ICT in the school system and raise the ICT literacy of the learners, teachers, and school heads were the objectives of DCP. Within this process of implementing ICT in schools, there are multiple factors. However, the TLE-ICT teachers' role

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is critical. Not all TLE-ICT teachers are equipped with the knowledge and skills to implement the role. Just like in other schools, TLE teachers are merely pinpointed by their school heads to become ICT teachers. They are sometimes not IT experts because most of them do not have prior knowledge about ICT. Most of these ICT teachers are not graduates of education. Thus, it is in this study that a competency-based assessment will be conducted to measure the level of competency of the ICT Teachers among the secondary schools in the Division of Ligao to design and propose a training program based on the result of this competency-based assessment.

2. METHOD

A descriptive-evaluative survey method of research was utilized in this study. The goal of the descriptive method of research is to provide answers to the issues raised by the facts and features of the topic under study. Due to its versatility in issue-solving, it is applied in many different areas of research. This entails describing, documenting, analyzing, and interpreting.

The process and effects of a system's creation and deployment are described in descriptive evaluation studies. In the context of the implementation environment, such as, for our purposes, the particular healthcare institution, the findings are frequently contextualized. Many qualitative and quantitative data gathering and analysis techniques are used in descriptive assessments, and the research design can be based on a variety of presumptions, including interpretivism and positivism as well as critical theory and critical realism. Both formative and summative evaluations make use of these investigations.

In general, survey research is used to describe what exists, in what amounts, and in what context. It is also used to identify problems that have been raised or observed, to assess needs and set goals, to determine whether or not specific objectives have been met, to establish baselines against which future comparisons can be made, to analyze trends over time, and to establish baselines. Independent and dependent variables cannot be directly controlled by the researcher in survey research, but they are utilized to define the study's scope. The researcher must develop a model that predicts the predicted associations between these factors before performing the survey. The survey is then developed to compare this model to the phenomenon's findings. The descriptive-evaluative-survey method of research was employed in the study in an attempt to describe, analyze, and evaluate the competency level of ICT teachers at the school's division in Ligao City to come up with a TPACK Training Program aimed at enhancing their ICT skills.

3. RESULTS AND DISCUSSION

The presentation, analysis, and interpretation of the data gathered relative to the demographic profile and competency level in ICT of teachers in Ligao City Division in the Philippines. Moreover, this chapter presents quantitatively the gap that this study tried to bridge.

3.1. Profile of TLE- ICT teachers in ligao city division

A population's traits are detailed in a demographic profile, which may be used to acquire an understanding of the social, economic, and cultural elements that affect a population's behavior and preferences. It can be useful for understanding the needs and preferences of different groups. This study delved into the age, sex, educational attainment, length of service, number of training attended related to ICT, and number of ICT teachers with National Certification (NC). The results will be utilized to understand the requirements and inclinations

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of the ICT Teachers to come up with sound programs to enhance their ICT competency level. The succeeding discussions specify the demographic profile of the 35 ICT teachers from 12 secondary schools of the Schools Division of Ligao City.

3.1.1. Age range

The ability of the teachers to impart knowledge has a big impact on how well the students are learning. Studies have revealed that factors relating to teachers, such as their age, have a significant impact on their ability or competence. **Table 1** shows the age groups of TLE – ICT Teachers in Ligao City Division. The data show that most of the respondents were in the age bracket of 20 – 30 and 31 – 40 years old as evidenced by the frequency of 13 or 37%. This is followed by the age bracket 51 and above with a frequency of 5 or 14% and lastly the age bracket 41 - 50 with a frequency of 4 or 12%. These findings reveal that some of the ICT teachers in the secondary schools of the school's division of Ligao City are relatively young and can still have the strength to surpass the challenges that their job entails. These findings are supported by the study of Araiz (2018) which revealed that most of the ICT teachers – coordinators in his study are within the 26 – 30 age brackets.

Table 1. Age range of TLE – ICT teachers in Ligao City division.

Age Range	f	%
51 and above	5	14
41-50	4	12
31-40	13	37
20-30	13	37
Total	**N=35**	**100**

3.1.2. Sex

It has been noted that a variety of factors affect teachers' preparedness and competence. **Table 2** shows the sex of TLE -ICT Teachers in the Ligao City Division (**Table 2**). Data show that the majority of the ICT teachers are male with a frequency of 21 or 60%. There were 14 (40%) female ICT teachers in the study. These results demonstrate that women generally use computers less often and with less interest than men.

Table 2. Sex group of TLE -ICT teachers in ligao city division.

Sex Group	F	%
Male	21	60
Female	14	40
Total	**N=35**	**100**

3.1.3. Educational attainment

Educational attainment is important in a teacher's ability to provide quality education to their students. Teachers with higher levels of education generally have more knowledge and skills that they can use to develop effective teaching strategies, design curricula, and create engaging learning experiences for their students. They are also better equipped to understand and apply the latest research and best practices in their field, and to adapt to changes in the educational landscape. In addition, higher levels of educational attainment often correspond with higher levels of subject matter expertise. **Table 3** shows the educational attainment of TLE-ICT teachers in the Ligao City Division.

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Table 3. Educational attainment of TLE -ICT teachers in Ligao City division.

Educational Attainment	F	%
Baccalaureate degree	31	88.57
Master's Degree	4	11.43
Doctorate Degree	0	0
Total	**N= 35**	**100**

31 of the 35 ICT teachers are Baccalaureate degree holders while 4 out of 35 of them have master's degrees. It can be noted that none of them are Doctorate holders. This study affirms the findings in a similar study by Araiz (2018) that the majority of the ICT teachers are Baccalaureate degree holders since that is the basic qualification standard along with educational attainment for an entry-level Teacher I position.[3] However, the need to professionally develop by finishing a higher degree such as a Master's degree or Doctorate must be given priority as well. This is because it demonstrates that the teacher has met certain standards of knowledge and competency in their subject area and teaching methods

Overall, educational attainment is an important factor in a teacher's ability to provide quality education to their students. It helps to ensure that teachers are knowledgeable, skilled, and qualified to teach their subject area and that they can provide the best possible learning experiences for their students.

3.1.4. Length of service

This concept refers to the number of years of employment of ICT- Teachers. **Table 4** shows the length of service of the TLE-ICT teachers in Ligao City Division. As shown in the data most of the ICT teachers are within the 1 – 4 years bracket with a frequency of 12 out of 35. 11 out of 35 ICT teachers have been in the service for 11 years and above. Also, 7 out of the 35 ICT teachers are newly hired with only less than a year in service. Lastly, 5 out of the 35 ICT teachers are within the 5 to 10 years bracket. These findings reveal that the majority of the teachers were already in the service for quite some time. This is important as it was revealed that the length of service of teachers influences their teaching performances as a teacher gains or increases his length of service, the higher their teaching performance.

Table 4. Length of service of TLE – ICT teachers in Ligao City Division**.**

Length of Service	f	%
11 and above	11	31.42
5-10	5	14.29
1-4	12	34.29
Less than 1	7	20
Total	**N=35**	**100**

3.1.5. Number of training attended related to ICT

The professional development activities, such as seminars, webinars, trainings, and workshops, related to ICT that teachers have participated in may be used to assess both their readiness and competency. They are more likely to succeed in achieving the department's primary objective, which is to deliver high-quality education, thanks to these efforts. **Table 5** shows the number of trainings related to ICT that the TLE- ICT teachers attended. The data reveal that 20 out of the 35 ICT teachers attended 1 to 4 trainings related to ICT while only 3 out of 35 ICT teachers attended 5 to 10 trainings related to ICT. It can also be well noted that

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12 out of the 35 ICT teachers do not have sufficient ICT training. These findings reveal that ICT teachers must attend training related to ICT as this will give them opportunities to improve their competence and provide their learners with quality ICT education. These findings are supported by the study of Olodin in 2017 which revealed the need to Conduct more seminars related to ICT and to prepare effective instructional materials.

Table 5. Number of training attended related to ICT of TLE – ICT teachers.

Number of Training	f	%
11 and above	0	0
5-10	3	8.57
1-4	20	57.14
none	12	34.29
Total	**N=35**	**100**

3.1.6. National certification (NC)

When an individual successfully demonstrates competency in every unit of competency that makes up a qualification, a National Certificate (NC) is awarded. Individuals who have successfully proven competence in a certain competency unit or competency cluster are given a Certificate of Competency (COC). In this case, NCII is related to ICT. **Table 6** shows the number of teachers who have NC related to ICT.

Table 6. Number of ICT teachers with national certification (NC)**.**

With NC	f	%
Yes	7	20
No	28	80
Total	**N=35**	**100**

28 of the 35 ICT teachers do not have NC while only 7 out of 35 have NC. These findings reveal that most of the ICT teachers do not have proof of competence in all the required units of competency of a national qualification defined under the promulgated training regulations by the Technical Education and Skills Development Authority (TESDA) aligned to specific levels in the Philippine Qualifications Framework, in this case, ICT. These findings are parallel to that of the study of Villanueva in 2014 which revealed that the majority of the teachers in Bulacan State University College of Education teaching Technical Vocational and Livelihood (TVL) subjects were non-NC holders. The findings of both studies reveal the need for teachers to invest in their NCs and undertake training and evaluation because teachers are important in giving learners the skills, they need to get a successful career.

3.2. Competency Level in Information and Communications Technology (ICT) Of Teachers in Ligao City Division

The capacity to utilize technological tools and resources successfully and efficiently for a variety of reasons, including communication, information management, problem-solving, and cooperation, is referred to as an individual's ICT (Information and Communication technological) competency level. Depending on a person's knowledge, abilities, and experience with various technological tools and applications, the competence level may change. To successfully use technology tools and resources for varied objectives, individuals and organizations must assess and enhance their ICT skill levels. It may raise output, effectiveness, and creativity while raising the caliber of output and services.

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The assessment of the thirty – five (35) ICT teachers of the secondary schools of the school's division of Ligao City is revealed in the succeeding discussions. These significant findings will be the basis for crafting the TPACK Training Program – aimed at helping teachers comprehend the interactions and mutual support that exist between pedagogy, topic knowledge, and technology in teaching and learning.

3.2.1. Technology operations and concept domain

These domains include competencies related to technical operations and concepts, and productivity of various ICT tools like computers and communication devices as well as applications available online or offline. **Table 7** shows the competence level of TLE-ICT teachers in technology operation and concepts.

Table 7. Competency of TLE-ICT teachers in technology operations and concept domain.

Indicators	WM	VI	RANK
Domain A: ***"Technology Operations and Concepts"***			
1. Demonstrate knowledge and skills in basic computer operation and other information devices including basic troubleshooting and maintenance.	3.75	MC	1
2. Use online and offline help facilities for troubleshooting, maintenance, and updating of applications.	3.54	MOC	2
3. Understand and effectively use the Internet and network applications and resource	3.44	MOC	3
4. Demonstrate knowledge and skills in information and data management	3.21	MOC	4
Average Weighted Mean	3.49	MOC	

Legend:
5 - 4.20-5.00 – Very Much Competent (VC)
4 - 3.40-4.19 – Much Competent (MC)
3 - 2.60-3.39 – Moderately Competent (MOC)
2 - 1.80-2.59 – Less Moderately Competent (LMOC)
1 - 1.00-1.79 – Not at all Competent (NC)

This domain includes four standards; demonstrate knowledge and skills in basic computer operation and other information devices including basic troubleshooting and maintenance, use online and offline help facilities for troubleshooting, maintenance, and update of applications, Understand and effectively use the Internet and network applications, and resources, and: demonstrate knowledge and skills in information and data management.

Table 7 reveals that under the technology operations and concepts, the ICT teachers of the Ligao City division have a weighted mean of 3.75 or that they are moderately competent in demonstrating knowledge and skills in basic computer operation and other information devices including basic troubleshooting and maintenance. The respondents obtained a weighted mean of 3.54 for using online and offline help facilities for troubleshooting, maintenance, and updating of applications, 3.44 for moderately competent in understanding and effectively using the Internet and network applications and resources, and 3.21 for demonstrating knowledge and skills in information and data management. The average weighted mean of the ICT teachers along with technology operations and concepts was 3.49 or moderately competent. These findings are similar to the findings in the study of Caluza *et al*. (2017). The strands in this domain were also ranked in the same order with weighted means of 2.28, 2.21, 2.10, and 2.03 respectively[7]. Furthermore, their study showed that ICT teachers had a foundational understanding of ICT. This does not, however, imply that

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instructors are already proficient in ICT. Teachers must be adept in using technology for teaching and other related duties, including understanding when and when to utilize it.

3.2.2. Social and ethical domain

These domains include competencies related to social, ethical, legal, and human issues and community linkage. This domain includes four standards; understand and observe legal practices in the use of technology, recognize and practice ethical use of technology at both personal and professional levels, plan, model, and promote a safe and sound technology-supported learning environment, and facilitate equitable access to technology that addresses learning, social and cultural diversity.

Table 8 shows the competency level of ICT teachers of the Ligao City division along social and ethical domains. The respondents obtained a weighted mean of 3.10 interpreted as moderately competent in planning, modeling, and promoting a safe and sound technology-supported learning environment. They also got a weighted mean of 2.88 or less moderately competent along facilitating equitable access to technology that addresses learning, and social and cultural diversity. A weighted mean of 2.86 or less moderately competent was obtained by the respondents along with recognizing and practicing ethical use of technology at both personal and professional levels. Lastly, the respondents obtained a weighted mean of 2.78 or less moderately competent in understanding and observing legal practices in the use of technology. The average weighted mean along the social and ethical domain of the respondents was 2.91 or less moderately competent.

Table 8. Competency of TLE-ICT teachers in social and ethical domains.

Indicators	WM	VI	RANK
Domain B: ***"Social and Ethical"***			
1. Understand and observe legal practices in the use of technology.	2.78	MOC	4
2. Recognize and practice ethical use of technology at both personal and professional levels	2.86	MOC	3
3. Plan, model, and promote a safe and sound technology-supported learning environment	3.10	MOC	1
4. Facilitate equitable access to technology that addresses learning, social and cultural diversity	2.88	MOC	2
Average Weighted Mean	2.91	MOC	

These findings are similar to the findings in the study of Arnaiz I 2018 which highlighted those competencies about social, ethical, legal, and human concerns as well as community ties are included in the social and ethical domains.[8] The two studies are similar in noting that ICT teachers have a basic understanding of and awareness of legal procedures relating to the usage of technology. Moreover, they acknowledged and promoted ethical technology use on both a personal and professional level, planned, exhibited, and promoted a secure learning environment supported by technology, and facilitated fair access to technology that considers learning, social, and cultural diversity.

3.2.3. Pedagogical

This domain includes competencies related to the use of technology in the following components of an instruction process: 1) planning and designing effective learning environments and experiences supported by technology; 2) implementing, facilitating, and monitoring teaching and learning strategies that integrate a range of information and communication technologies to promote and enhance student learning; and 3) assessing and

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evaluating student learning and performances. **Table 9** shows the competency level of the ICT teachers of the Ligao City division along the pedagogical domain.

Table 9. Competency of TLE-ICT teachers in the pedagogical domain.

Indicators	WM	VI	RANK
Domain C: ***"PEDAGOGICAL"***			
1. Apply technology to develop students' higher-order thinking skills and creativity	2.58	MOC	5
2. Provide performance tasks that require students to locate and analyze information and to use a variety of media to communicate results	2.74	MOC	1
3. Conduct open and flexible learning environments where technology is used to support a variety of interactions among students, cooperative learning, and peer instruction	2.70	MOC	3
4. Evaluate the usage of ICT integration in the teaching-learning process and use results to refine the design of learning activities	2.64	MOC	4
5. Use computers and other technologies to collect and communicate information to students' colleagues, parents, and others.	2.71	MOC	2
6. Apply technology to facilitate a variety of appropriate assessment and evaluation strategies recognizing the diversity of learners.	2.43	LMOC	6
Average Weighted Mean	**2.63**	**MOC**	

The respondents obtained a weighted mean of 2.74 or moderately competent along providing performance tasks that require students to locate, in terms of using computers and other technologies to collect and communicate information to students, colleagues, parents, and others they obtained a weighted mean of 2.71 or moderately competent. In conducting open and flexible learning environments where technology is used to support a variety of interactions among students, cooperative learning, and peer instruction they obtained a weighted mean of 2.70 or moderately competent. TLE-ICT teachers were also moderately competent in terms of evaluating the usage of ICT integration in the teaching-learning process and using results to refine the design of learning activities. On applying technology to develop students' higher-order thinking skills and creativity, the respondents obtained a weighted mean of 2.58 or moderately competent. Finally, on applying technology to facilitate a variety of appropriate assessment and evaluation strategies recognizing the diversity of learners, the respondents obtained a weighted mean of 2.43 or less moderately competent. The average weighted mean in the pedagogical domain is 2.63 or less moderately competent.

These findings are related to the study of Caluza *et al*. (2017). Both studies revealed that ICT teachers are less moderately competent or have basic knowledge of effectively managing open and adaptable learning settings that make use of technology to facilitate a range of student interactions, cooperative learning, and peer education. They thoroughly assess how ICT integration is used in the teaching-learning process and how to use the findings to improve and create learning activities. They gather and share information from students, coworkers, parents, and others using computers and other technology. Finally, they use technology effectively to provide a range of suitable assessment and evaluation procedures that consider the diversity of learners.

3.2.4. Professional domain

These domains include competencies related to professional growth and development, research, innovation, and collaboration. This domain includes three standards; Proactively engage in exploring and learning new and emerging technologies, continuously evaluate and reflect on the use of technology in the profession for development and innovation, share

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experiences and expertise, and collaborate with peers and stakeholders in advancing the use of technology in education and beyond. **Table 10** shows the competence level of TLE-ICT Teachers in the Pedagogical Domain.

Table 10. Competency of TLE-ICT teachers in the professional domain.

Indicators	WM	VI	RANK
Domain D: ***"PROFESSIONAL"***			
1. Proactively engage in exploring and learning new and emerging technologies	2.33	LMOC	1
2. Continuously evaluate and reflect on the use of technology in the profession for development and innovation	2.21	LMOC	2
3. Continuously evaluate and reflect on the use of technology in the profession for development and innovation.	2.06	LMOC	3
Average Weighted Mean	**2.20**	**LMOC**	

Data reveal that the respondents obtained a weighted mean of 2.33 or less moderately competent along proactively engaging in exploring and learning new and emerging technologies. Along with continuously evaluating and reflecting on the use of technology in the profession for development and innovation, the respondents obtained a weighted mean of 2.21 or less moderately competent. On sharing experiences and expertise and collaborating with peers and stakeholders in advancing the use of technology in education and beyond, the respondents obtained a weighted mean of 2.06 or less moderately competent. Finally, the respondents garnered an average weighted mean of 2.20 in the professional domain. This means that they are less moderately competent. These findings are similar to the study of Araiz (2018) which highlighted those competencies about professional development, research, cooperation, and innovation are included in professional domains. ICT educators in this field mostly experiment with and learn about cutting-edge technology. They work half-and-half with colleagues and stakeholders to advance the use of technology in education and beyond as they analyze and reflect on the use of technology in their profession for growth and innovation. They also exchange experiences and knowledge. This means that a crucial component of the successful integration of ICT in classroom instruction is the professional development of teachers. It is thus advised that educators take part in training that will advance their understanding of and proficiency with computers.

3.3. Competency Level of ICT Teachers of Ligao City Division

Figure 3 reveals the competency level of ICT teachers of the Ligao City Division. This study compared four aspects, including technology operation and concept, social and ethics, pedagogy, and professionalism.

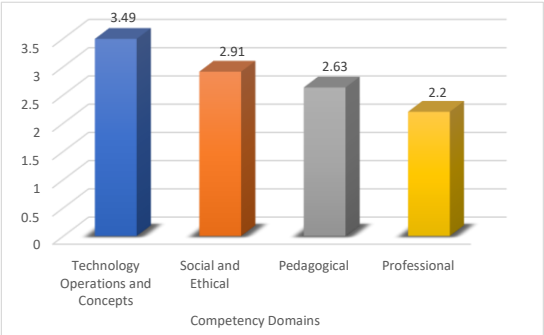

Figure 3. The competence level of ICT coordinators in the four competency domains.

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3.4. Significant Relationship Between the Demographic Profile and The Competency Level of the TLE- ICT Teachers Along the Four Competency Domains

The association between a person's demographic profile and ICT (information and communication technology) proficiency level is complicated. A person's degree of ICT proficiency can be influenced by a variety of variables, including age, gender, education, socioeconomic situation, and cultural background. In this study, the researcher would like to give light on the significant relationship between the demographic profile – age, sex, educational attainment, length of service, number of training attended, and qualification for National Certification (NC) and their competency level in ICT. It is crucial to keep in mind that there are numerous exceptions and individual variations, making these patterns not always reliable. Furthermore, it is challenging to generalize about ICT proficiency since it is a complicated, multidimensional concept including a variety of skills and information.

The findings on whether there is a significant relationship between these variables are revealed in the succeeding discussions. These significant findings will be the basis for crafting the TPACK Training Program – aimed at helping teachers comprehend the interactions and mutual support that exist between pedagogy, topic knowledge, and technology in teaching and learning. **Table 11** reveals that in terms of age, the average chi-square value on technology operations and concepts, social and ethical, pedagogical, and professional domains is 9.622. The average chi–square values of the four competency domains are less than the critical value of 16.919. This means that there is no significant relationship between the age and the competency level in ICT of the ICT teachers. This suggests that ICT teachers are equally skilled or at least as skilled regardless of their age. The finding is related to the research of Lam (2000), who discovered that there was no significant link between age and ICT proficiency (F (8,458) =.846, p=.563). In a similar line, the study validated the claim that there is no connection between ICT teachers' age and their degree of competence.

As revealed in the data analysis of the respondents' sex, the average of chi-square values on technology operations and concepts, social and ethical, pedagogical, and professional domains is 3.098. The average of the chi-square values of each of the four competency domains is less than the critical value of 7.815. This means that there is no significant relationship between the sex and the competency level in ICT of the ICT teachers.

Table 11. Relationship of the profile to the competency level of the TLE -ICT teachers.

	df	∞	Tabular X^2	Computed X^2	Decision	Conclusion
Age	9	0.5	16.919	9.622	Accept H_O	No Significant Relationship
Sex	3	0.5	7.815	3.098	Accept H_O	No Significant Relationship
Educational Attainment	2	0.5	7.815	5.098	Accept H_O	No Significant Relationship
Length of Service	9	0.5	16.919	9.798	Accept H_O	No Significant Relationship
No. of Training Attended	9	0.5	16.919	11.462	Accept H_O	No Significant Relationship
National Certificate Holder	2	0.5	7.815	2.740	Accept H_O	No Significant Relationship

This implies that both male and female ICT professors were equally competent and that one's gender should not be used to judge one's aptitude, particularly in the field of information and communications technology. This conclusion supports the finding of Danner

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(2013) that gender had no discernible influence on perceived ICT competency ratings. It was revealed that the mean of perceived ICT competencies of the males is higher than that of the females (M= 12.083), but this difference is not significant enough to draw the inference that the males perceive themselves to be more skilled ICT users than the females.

In terms of educational attainment, the average of the chi-square values in technology operations and concepts, social and ethical, pedagogical, and professional domains is 5.098. The chi–square values of each of the four competency domains are less than the critical value of 7.815. This means that there is no significant relationship between the educational attainment and the competency level in ICT of the ICT teachers.

The findings are in contrast with those of Moffatt (1961), who noted that education has the burden of assisting in the development of competence for people who assume their position in society.[14] The level of formal education a worker has is frequently used as a proxy for that worker's level of professional competence because education is one of the mechanisms that fosters and develops workers' professional competence, which is related to what Borghans *et al*. (2001) defined as competence. With regards to the length of service, the average of the chi-square values in technology operations and concepts, social and ethical, pedagogical, and professional domains is 9.798. The chi-square values of each of the four competency domains are less than the critical value of 16.919. This means that there is no significant relationship between the length of service and the competency level in ICT of the ICT teachers.

The outcome is consistent with Wang's findings from 2006, which indicated that there were no derivable significant correlations between academic orientation, professional development, and duration of service as a Mathematics teacher and teaching competency (Wang, 2006). As teaching experience increases, the average ICT competence index score decreases, going from a score of 59 for teachers with less than a year of experience to a score of 49 for teachers with more than 20 years of experience, according to the findings of Teacher ICT Skills (see https:// trove.nla.gov.au/version/34945782). ICT teachers' duration of service and proficiency level are likely to have a complicated and nuanced connection that depends on many personal and environmental variables. Examining this link in the context of particular research topics is crucial, as is taking into account additional elements that may have an impact on competency levels, such as formal education and training, continuous professional development, and teaching methods.

The more experienced and older teachers are less likely to have ICT abilities, whereas the younger and newer teachers are bringing ICT skills and knowledge to the field. In terms of the number of training attended, the average of the chi-square values in technology operations and concepts, social and ethical, pedagogical, and professional domains is 11.462. The chi-square values of each of the four competency domains are less than the critical value of 16.919 except under the pedagogical domain. Although generally, this means that there is no significant relationship between the number of training attended and the competency level in ICT of the ICT teachers, it is important to note that ICT teachers associate their pedagogical competence with the training that they have attended. This has been proven in the study of Dela Fuente and Biňas (2020) that teachers who attended 11 and above ICT-related seminars and training are more competent since they have gained vast knowledge in different ICT-related skillsets.

As to NC Qualification, the average of the chi-square values in technology operations and concepts, social and ethical, pedagogical, and professional domains is 2.740. The chi-square values of each of the four competency domains are less than the critical value of 7.815. This means that there is no significant relationship between NC qualification and the competency

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level in ICT of the ICT teachers. It can be inferred that having these qualifications does not guarantee ICT competence. This is true in the study of Villanueva in 2014 which revealed that the majority of the faculty members handling the technical vocational education subjects were not NC holders. Furthermore, the data revealed that there was no significant relationship between the demographic profile and competency levels of the ICT teachers of Ligao City Division. This means that the teacher's attributes do not in any way affect his or her ICT competence.

3.5. Proposed Training Design

The TPACK Training Program typically includes a series of workshops or training sessions that provide teachers with opportunities to explore the TPACK framework and develop their skills in integrating technology into their teaching practice. The program may cover topics such as:

(i) Understanding the TPACK framework and its relevance to teaching.
(ii) Identifying and selecting appropriate technologies to support teaching and learning.
(iii) Adapting and modifying existing lesson plans to incorporate technology.
(iv) Developing new lesson plans that effectively integrate technology.
(v) Incorporating technology into formative and summative assessments.
(vi) Evaluating the impact of technology on student learning outcomes.

The TPACK Training Program may also include opportunities for teachers to collaborate, share best practices, and receive feedback and support from experienced trainers or mentors. The goal of the TPACK Training Program is to help teachers develop the skills and knowledge they need to effectively integrate technology into their teaching practice and enhance student learning outcomes. By providing teachers with the support, they need to develop their TPACK, the program can help to create more effective and engaging learning experiences for students. Moreover, the findings of this study revealed the need to focus on the Professional Domain of the ICT Competency. This particular domain got the lowest weighted mean of 2.2 which means that the ICT teachers are fairly competent in this particular domain. The succeeding pages present the proposed TPACK Training Program entitled "BIT to BYTE" – Back in Time to Boost Your Technological Expertise.

4. CONCLUSION

In the light of the findings, the following conclusions were drawn:

(i) The TLE- ICT teachers in the secondary schools of the school's division of Ligao City are relatively young, women, baccalaureate degree holders, were already in the service for quite some time, and have attended training related to ICT but are not NC Holders.
(ii) The TLE-ICT teachers were much more competent in technology operations and concepts, moderately competent in social ethical, and pedagogical, but less competent in the professional domain.
(iii) There is no significant relationship between the demographic profile of the TLE-ICT teachers and their ICT Competency level. This means that the demographic profile of the ICT teachers cannot be associated with their ICT Competency Level.
(iv) In terms of a series of workshops or training sessions that provide instructors the chance to examine the TPACK framework and hone their skills in incorporating technology into all contexts of their teaching practice, the TPACK Readiness Training Program might be helpful to teachers.

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6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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