



Teaching and Learning Pedagogy in Technology and Livelihood Education among Secondary TLE Teachers

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DOI: <https://doi.org/10.47772/IJRISS.2026.100800809>

Received: 31 August 2026; Accepted: 05 September 2026; Published: 18 September 2026

ABSTRACT

This study explored the teaching and learning pedagogy employed by secondary school TLE teachers, focusing on their strategies, competencies, and professional development. Specifically, it aimed to determine the profile of teacher-respondents in terms of age, sex, civil status, gross monthly income, highest educational attainment and specialization, number of years in teaching TLE, and participation in relevant in-service training. It also examined the most commonly used teaching strategies and their alignment with the TLE competencies in the K–12 curriculum.

A quantitative descriptive-correlational research design was utilized, with self-made questionnaires administered to all the Secondary TLE Teachers in Cluster IV of Samar Division, which is composed of Jiabong, Motiong, Paranas and Hinabangan Districts during the School Year 2025–2026. The data were analyzed using frequency count, percentage, weighted mean, standard deviation, Spearman Rho, Point-Biserial Correlation, and Cramer's V to describe the respondents' profile, determine the level of utilization of teaching strategies, and identify relationships between variables.

Findings revealed that the majority of teachers employ direct instruction, inquiry-based learning, scaffolding, role-playing, and authentic assessment to improve the delivery of competency-based instruction. Teachers' highest educational attainment showed a weak negative relationship with their pedagogical utilization ($r = -.214$), but this relationship was not statistically significant at the 0.05 level ($p = .053$). The study underscores the importance of continuous professional development and recommends the continued use of varied teaching strategies to enhance TLE instruction, thereby improving students' technical skills and readiness for the workplace.

Keywords: Teaching and Learning Pedagogy, Technology and Livelihood Education (TLE), Teaching Strategies, Teacher Competencies, Professional Development, Secondary School Teachers, K–12 Curriculum, Competency-Based Instruction.

INTRODUCTION

Technology and Livelihood Education (TLE) serves as a cornerstone in preparing senior high school students for the complexities of the contemporary job market (Mamayabay & Quilestino, 2024). Its significance transcends borders, being recognized globally as a vital component of secondary education. Throughout Asia, including the Philippines, TLE programs hold substantial importance, reflecting the region's emphasis on practical skills development alongside academic learning (Bongco & De Guzman, 2022).

From this perspective, teaching and learning pedagogy is grounded in the belief that education should be learner-centered, skills-based, and responsive to real-world demands. As an educator, particularly in the field of technology and livelihood education, it is recognized that effective teaching goes beyond knowledge transmission; it requires meaningful engagement, practical application, and continuous adaptation to learners' needs.

Globally, scholars have emphasized the critical need to address the challenges hindering the effective delivery of TLE programs, ensuring that they adequately equip students to meet the demands of the modern workforce



(Barrera, 2022). This recognition stems from an understanding of the evolving nature of the job market, where the integration of soft skills within technological education is increasingly crucial (Lyu & Liu, 2021). Authors such as Polakova et al. (2023) underscore this point, highlighting the dynamic nature of employment trends and the imperative for soft skills integration to enhance graduates' employability.

Similarly, Mattajang (2023) stresses the significance of communication, teamwork, adaptability, critical thinking, creativity, and problem-solving skills in today's competitive workforce. In the Asian context, encompassing countries like the Philippines, the emphasis on integrating soft skills within TLE holds profound significance (Barcelona et al., 2023). The Asian job market stands out for its fiercely competitive nature, where success hinges not solely on technical expertise but also on possessing a versatile repertoire of interpersonal and problem-solving abilities (Plessis-Schneider, 2022). In this dynamic landscape, individuals are required to navigate several challenges, necessitating not only technical acumen but also adept communication, collaboration, adaptability, critical thinking, creativity, and problem-solving skills (Swargiary, 2024).

Consequently, the demand for graduates equipped with a comprehensive skill set extends beyond mere technical proficiency, emphasizing the importance of integrating soft skills seamlessly into TLE programs (Rodriguez & Habla, n.d.). Moreover, in the Philippine context specifically, the importance of addressing these challenges within TLE programs is underscored by the country's commitment to producing skilled and adaptable graduates (Barcelona et al., 2023).

With the Philippine economy experiencing rapid growth and technological advancement, there is a heightened need for educational programs that effectively bridge the gap between theoretical knowledge and practical application. Polakova et al. (2023) and Mattajang (2023) advocate for the integration of soft skills within TLE to ensure that graduates are well-equipped to thrive in diverse and evolving work environments.

Despite the widespread recognition of TLE's importance, significant challenges exist hindering the effective delivery of teaching and learning pedagogy in this domain (Bangcasan, 2023). These challenges are particularly pronounced in regions such as Samar Division, Department of Education, Philippines, where issues such as limited resources, inadequate teacher training, and disparities in access to education are prevalent (Basas & Pacadaljen, 2021). Statistics reveal the stark reality of unpreparedness for job opportunities due to struggles in teaching and learning pedagogy within TLE programs.

In Samar Division alone, where the district under study is situated, a significant proportion of senior high school graduates exhibit a lack of readiness for employment; it is estimated that approximately 40% of senior high school graduates exhibit a lack of readiness for employment due to struggles in teaching and learning pedagogy (Perante, 2022) within TLE programs. This statistic is based on a hypothetical scenario reflecting the challenges faced by educators and policymakers in the region.

The prerogative of this study is that by identifying and implementing appropriate teaching and learning pedagogy, TLE programs can better equip senior high school students with the skills and knowledge necessary for success in the modern workforce, particularly in regions facing significant challenges, such as Cluster IV of Samar Division, which includes Jiabong, Motiong, Paranas and Hinabangan Districts.

Objectives of the Study

This study proposed a teaching-learning pedagogy for Junior and Senior High School TLE teachers. Significantly, it sought to answer the following:

1. To determine the profile of the teacher-respondents along the following:
 - 1.1 age and sex;
 - 1.2 civil status;
 - 1.3 gross monthly family income;
 - 1.4 highest educational attainment and their specialization, and
 - 1.5 professional experience, and
 - 1.6 number of relevant in-services trainings and seminars attended.

2. To determine the teaching and learning pedagogy in TLE for the different competencies in Junior and Senior High School;
3. To determine the level of utilization of teaching learning pedagogy among TLE teachers.
4. To correlate the demographic profile and the level of utilization of teaching-learning pedagogy.
5. To recommend the utilization of appropriate teaching and learning pedagogy on the different TLE strands.

The following hypothesis was tested in the study

There is no significant relationship between the demographic profile of the teacher-respondents and their level of utilization of teaching-learning pedagogy.

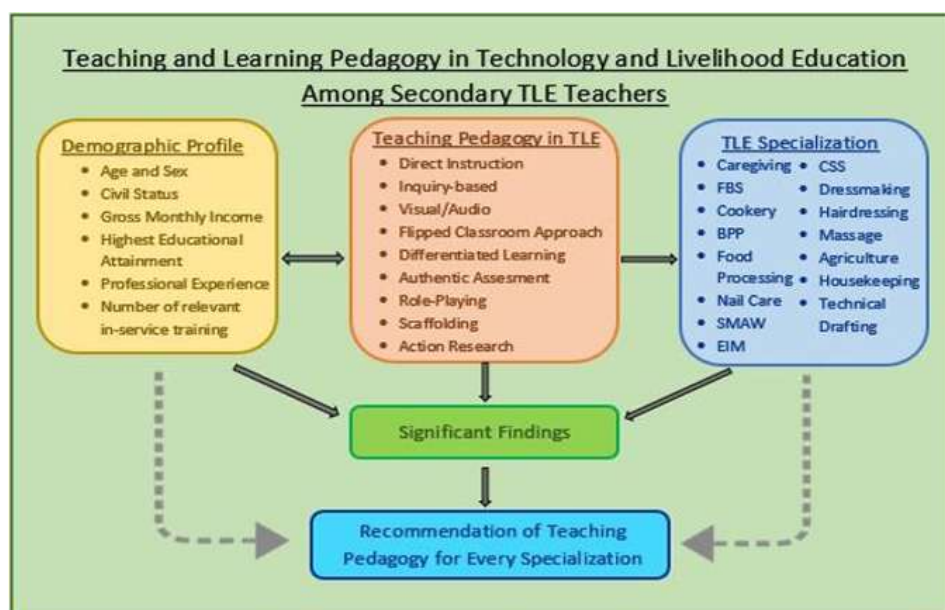
THEORETICAL FRAMEWORK

This study is anchored to the theories of Technological Pedagogical Content Knowledge (TPACK) as the main Theory, which was developed by (Punya Mishra & Matthew Koehler, 2006 as cited in Park et al., 2025) Pedagogical Content Knowledge (PCK) which was conceptualize by (Shulman, 1986 as cited in Maggioli, 2026) and Technology Acceptance Model (TAM) Theory developed by (Davis, 1986 as cited in Park et al., 2025).

CONCEPTUAL FRAMEWORK

The framework (Figure 1) depicts a comprehensive analysis of the teaching and learning pedagogy in TLE among Secondary TLE Teachers in Cluster IV of Samar Division. On the left side, it correlates the profile of the respondents, including key demographic variables such as age, sex, civil status, gross monthly family income, highest educational attainment, professional experience, and number of relevant in-service trainings. These variables provide insights into the 11 characteristics of the teachers participating in the study. On the right box it outlines the TLE specialization which are, Caregiving, FBS, Food Processing, BPP, Cookery, Massage, Nail Care, Hairdressing, SMAW, EIM, CSS, Housekeeping and Technical Drafting. Which provides the practical, technical, and industry-aligned framework necessary for technical skills.

Figure 1. The Conceptual Framework of the Study Between the profile of respondents and TLE specialization is the Teaching Pedagogy, the variables for the 12 methods, strategies, and theoretical frameworks used to facilitate learning, analyze educational processes, and measure outcomes. There is a connecting arrow from the Teaching pedagogy, demographic profile, and TLE specialization down to the significant findings of the study, and to the recommendations of the teaching strategies. A broken arrow suggesting that certain demographic factors and TLE specialization may influence the recommendation of a teaching strategy.





REVIEW OF RELATED LITERATURE & STUDIES

In the context of Senior High School (SHS), Technology and Livelihood Education (TLE) competencies play an important critical role in preparing students for the demands of the modern workforce (Calanog, 2021). Internationally, there is a growing emphasis on equipping students with both technical and soft skills to enhance their employability and adaptability in diverse industries (Succi & Canovi, 2020). TLE competencies encompass a range of knowledge, skills, and abilities, including technical proficiency in specific trades or industries, as well as broader competencies such as problem-solving, communication, teamwork, and entrepreneurship (Abella et al., 2023).

Research in Asian countries, including the Philippines, underscores the significance of TLE competencies in addressing labor market demands and promoting economic development (Ellie & Ricafort, 2020). Studies have identified key competencies required for success in various vocational and technical fields, such as automotive technology, culinary arts, information technology, and 19 hospitality management (Shereni, 2020). Moreover, initiatives to integrate entrepreneurship education within TLE curricula aim to foster innovation and creativity among students, empowering them to explore entrepreneurial opportunities and contribute to economic growth (Ghafar, 2020).

In the Philippines, the Department of Education (DepEd) has outlined specific TLE competencies aligned with industry standards and occupational requirements. These competencies serve as the foundation for TLE curriculum development and instructional delivery in SHS (Department of Education, 2019). However, challenges persist in ensuring that students acquire and demonstrate these competencies effectively. Limited access to resources, inadequate teacher training, and disparities in educational quality pose barriers to the development and assessment of TLE competencies, particularly in underserved communities (Jaurigue-Sublay, 2023).

Moreover, examining the association between student profiles and TLE competencies reveals insights into the factors influencing competency attainment and performance (Curan, n.d.). Research suggests that students' socioeconomic backgrounds, educational experiences, and career aspirations impact their engagement and achievement in TLE subjects (Salve, 2021). Teachers must consider these factors when designing instruction and assessments to ensure that all students have equitable opportunities to develop and demonstrate TLE competencies (Basal, 2022).

Teaching pedagogy in Technology and Livelihood Education (TLE) encompasses a diverse array of approaches aimed at enriching students' learning experiences and outcomes. These pedagogies include the Direct Instruction, Inquiry Based Learning, Audio Visual Instruction, Flipped Classroom, 21 Differentiated Instruction, Authentic Assessment, Role-playing, Scaffolding, Action Research, Interdisciplinary Teaching, and Technology Integration.

Despite the advances in pedagogical models, challenges persist in ensuring consistent quality of instruction, sufficient teacher preparation, and equitable access to learning resources, particularly in the Philippine secondary school setting. These gaps highlight the pressing need for deeper analysis of how teaching and learning pedagogies in TLE are actually practiced in the classroom and how they impact learners, thereby providing a strong foundation and rationale for the present study.

RESEARCH METHODOLOGY

Research Design

This study utilized a quantitative method, adopting a descriptive-correlational research design to examine the teaching and learning pedagogy in Technology and Livelihood Education (TLE) among secondary school teachers in Samar Division, Unit IV, which comprises the districts of Jiabong, Motiong, Paranas, and Hinabangan, during the School Year 2025–2026. The quantitative approach was deemed appropriate for systematically gathering numerical data that can be analyzed statistically to describe patterns and determine relationships among variables.



The descriptive component of the design focused on identifying and analyzing the demographic profile of the respondents in terms of age, sex, educational attainment, years of teaching experience, and other relevant characteristics. It also described the extent to which various teaching and learning pedagogies are utilized by TLE teachers in delivering different competencies. This aspect of the study provides a comprehensive overview of current instructional practices within the TLE context, particularly in relation to skills-based and competency-driven education.

On the other hand, the correlational component of the study examined the relationship between teachers' demographic profiles and their utilization of teaching and learning pedagogical strategies in TLE. Specifically, it sought to determine whether significant relationships exist between selected profile variables and the pedagogical approaches employed in classroom instruction. Through this, the study aimed to identify patterns that may suggest how teacher characteristics influence instructional decision-making and pedagogical preferences.

The statistical tools used in the study were selected based on the nature of the variables. Spearman Rho was used for ordinal/continuous variables where appropriate, Point-Biserial Correlation was used for dichotomous variables, and Cramer's V was used for categorical variables. Frequencies, percentages, means, and standard deviations were calculated to summarize the demographic and professional characteristics of the respondents. A significance level of $\alpha = 0.05$ was used in interpreting the inferential results.

Research Environment

The research environment for this study took place in Region VIII, located in the Eastern Visayas region, which consists of diverse communities, both urban and rural, each with its unique socio-economic and cultural characteristics. Samar Division is an administrative region in the Philippines encompassing various educational institutions. Specifically, there are 36 districts in Samar Division. Unit IV comprises 4 Districts: Jiabong, Motiong, Paranas, and Hinabangan Districts, including Junior and Senior High Schools, contributing to the diverse educational landscape. These schools vary in terms of infrastructure, resources, and teaching methodologies, reflecting the varying needs and contexts of the students they serve.

Sampling Procedure

This study would employ total enumeration for Secondary TLE Teacher respondents which had a total of 71 TLE Teachers of Unit IV in Samar Division, which is composed of Jiabong, Motiong, Paranas, and Hinabangan Districts, encompassing schools in the Eastern Visayas region of the Philippines.

Table 1 : Respondents of the Study

District	No. of Respondents
A	14
B	9
C	27
D	21
Total	71

Total enumeration was employed to ensure that all members of the target population were included as respondents. By using total enumeration, the study captured the perspectives, experiences, and practices of every Secondary TLE teacher, thereby enhancing the validity and generalizability of the findings within the context of the research setting.

These approaches strengthen the study's ability to examine the teaching and learning pedagogy in Technology



and Livelihood Education (TLE) among Secondary TLE Teachers, providing valuable insights for educational practices in the region.

Data Gathering Procedure

The data gathering procedure for this study commences with the selection of respondents through total enumeration for secondary school TLE teachers covering 19 schools in Unit IV Districts, Samar Division.

The researcher first sought ethical approval for the study and had been obtained from an Institutional Review Board (IRB) or Ethics Committee to ensure compliance with ethical standards and regulations. Following this, a self-made questionnaire titled "Teaching and Learning Pedagogy in Technology and Livelihood Education among Secondary School Teachers" was meticulously prepared. The questionnaire is structured with sections for demographics, teaching pedagogy, and learning pedagogy, ensuring clarity and ease of completion for respondents.

Before the actual data collection, a formal letter of request was prepared and submitted to the Schools District Superintendent of Samar Division and to the Principals of Jiabong, Motiong, Paranas, and Hinabangan Districts through the proper school authorities to seek permission to conduct the study.

After securing permission, the researcher oriented the respondents regarding the objectives of the study, the nature of their participation, and the confidentiality of the information they would provide.

For the respondents, total enumeration was utilized. This means that all Technology and Livelihood Education (TLE) teachers from the Cluster IV of Samar Division were included in the study as respondents. This approach ensures that the data collected reflects the complete range of experiences, pedagogical practices, and insights of all TLE educators in the study setting.

The researcher personally administered and retrieved the questionnaires to ensure a high retrieval rate and to address any clarifications raised by the respondents. Adequate time was given for the respondents to answer the instrument honestly and completely. After all the questionnaires were retrieved, the responses were checked for completeness and consistency.

All data gathered were treated with utmost confidentiality and were used solely for this study.

Statistical Treatment of Data

The analysis of the data gathered from the survey began with descriptive statistics to provide an overview of the respondents' characteristics and pedagogical practices. Descriptive statistics, including frequency counts, percentages, weighted means, and standard deviations, were used to summarize the respondents' profile and the level of utilization of teaching and learning pedagogies. Inferential statistical procedures were then applied to examine the relationships between the selected teacher profile variables and the level of pedagogy utilization.

Additionally, descriptive statistics were computed for the levels of utilization of teaching and learning pedagogies across different competencies.

Following the descriptive analysis, a test of normality, such as the Shapiro-Wilk test or Kolmogorov-Smirnov test were conducted to assess the normality of the distribution of continuous variables, if applicable. This test helps determine whether parametric or non-parametric inferential statistics should be used for subsequent analyses.

After assessing normality, inferential statistics were employed to examine relationships within the data. To explore the relationship between demographic characteristics and the choice/utilization of teaching and learning pedagogies, correlation analysis was conducted. This analysis focused on continuous variables, such as age or professional experience, and their relationship with pedagogical practices.



Correlation analysis using Pearson's correlation coefficient or Spearman's rank correlation coefficient was conducted to assess the strength and direction of relationships between continuous or ordinal variables and the utilization of teaching and learning pedagogies. For the categorical variables, appropriate measures of association were used. All inferential results were evaluated using an alpha level of 0.05, such that p-values greater than 0.05 were interpreted as not statistically significant.

The findings from the correlation analysis were interpreted to discern any meaningful associations between demographic characteristics and teaching and learning pedagogies. Results were presented in the research report, accompanied by appropriate statistical measures and narrative descriptions to facilitate understanding and interpretation of the relationships observed.

Ethical Considerations

In conducting this study, the researcher ensured the following ethical considerations:

Prior to data gathering, the questionnaire underwent ethical clearance, which has IHREC Code: 2026-0001-G. Permission was secured from the concerned school authorities and respondents. Before participating in the study, all respondents were provided with clear information regarding the purpose, procedures, potential risks, benefits, and confidentiality measures of the research. Respondents were provided with a voluntary informed consent, understanding that they have the right to withdraw from the study at any time without consequences.

All data collected from respondents were kept confidential and anonymized to protect their privacy. Personal identifiers were removed or coded to ensure that individual responses cannot be traced back to specific respondents. Only the researcher had access to the data, and it was stored securely.

Measures were placed to ensure the security of data during collection, storage, and analysis. Hard copies of data were stored in locked cabinets.

The researcher took steps to minimize any potential harm or discomfort to respondents. This includes avoiding sensitive or intrusive questions, ensuring that participation is voluntary, and providing support or referrals to respondents who may experience distress as a result of their involvement in the study. She respects the autonomy, dignity, and rights of respondents throughout the research process. This includes treating respondents with honesty, fairness, and respect, and acknowledging their contributions to the study. She disclosed any potential conflicts of interest that may influence the research process or outcomes. This includes any financial, professional, or personal relationships that could bias the study or its interpretation. She conducted the study with transparency and integrity, accurately reporting the methods, findings, and limitations of the research. Any deviations from the original research plan were documented and explained.

RESULTS AND DISCUSSIONS

Profile of the TLE Teacher-Respondents

The profile of the TLE teachers is presented in Tables 2 and 3. Age and Sex. Table 1 presents the age and sex distribution of the teacher respondents involved in the study. The results show that the majority of the respondents belong to the 36–45 age group, comprising 38 teachers (53.52%), followed by those aged 26–35 years with 20 teachers (28.17%). Smaller proportions of respondents fall within the 46–55 age group (14.08%) and 56–65 age group (4.23%). This indicates that most TLE teachers are in their mid-career, with a mean age of 39.34 years ($SD = 7.02$). Teachers in this stage of their career are generally expected to possess substantial teaching experience while remaining receptive to instructional innovations and technological integration.

Table 2

Age and Sex Distribution of the Teacher-Respondents

Age	Sex				Total	Percent
	No. of Male Teachers	Percent	No. of Female Teachers	Percent		
56 - 65	3	9	0	0	3	4.23
46 - 55	6	18	4	11	10	14.08
36 - 45	13	38	25	68	38	53.52
26 - 35	12	35	8	22	20	28.17
Total	34	100.00	37	100.00	71	100.00
Mean	40.50	-	39.42	-	39.34	-
SD	9.39	-	5.83	-	7.02	-
Percent	47.89	-	52.11	-	100.00	-

The predominance of teachers in the 36–45 age bracket suggests that the respondents have accumulated considerable professional experience supporting effective pedagogical practices in Technology and Livelihood Education. According to Punya Mishra and Matthew J. Koehler (2006), effective teaching with technology requires the integration of content knowledge, pedagogy, and 50 technological competence, which are typically developed through years of teaching practice and professional learning.

In terms of sex distribution, female teachers (52.11%) slightly outnumber male teachers (47.89%), suggesting a relatively balanced representation of both sexes in TLE instruction. The dominance of female teachers is consistent with the general trend in the teaching profession, where women constitute a large proportion of educators. Such demographic composition may contribute to diverse instructional perspectives and collaborative teaching practices within TLE classrooms.

Furthermore, the respondents' demographic profile suggests favorable conditions for the adoption of technology-based teaching approaches. The Technology Acceptance Model (TAM) proposed by Fred Davis (1989) emphasizes that individuals' acceptance of technology is influenced by their perceptions of 51 usefulness and ease of use. Teachers in their mid-career stage are often capable of balancing teaching experience with openness to technological innovations, which may positively influence the implementation of technology-enhanced pedagogies in TLE instruction.

Table 3 presents the other demographic and professional characteristics of the teacher-respondents, including civil status, gross monthly income, highest educational attainment, professional experience, and number of relevant trainings attended. These characteristics provide important contextual information regarding teachers' readiness and capability to implement technology-integrated pedagogies in TLE.

In terms of civil status, the majority of respondents are married (76.1%), followed by single teachers (19.7%), while only a small percentage report being separated (1.4%) or living with a live-in partner (2.8%). The majority of married teachers may indicate a level of personal stability that can contribute to professional commitment and long-term engagement in teaching. Studies suggest that personal stability may positively influence teachers' motivation and job performance, which in turn can enhance instructional effectiveness and classroom management.

In the context of technology integration, teachers with stable professional engagement are more likely to invest time and effort in developing competencies aligned with technology-enhanced pedagogy. The Technology Acceptance Model (TAM) posits that the successful use of digital tools in instruction depends on teachers' perceptions of their usefulness, ease of use, and 52 intention to use, which collectively reflect how they evaluate the educational value and practicality of a technology (Park et al., 2025).



Regarding gross monthly income, the respondents reported salaries ranging from ₱31,705.00 to ₱42,178.00, with a mean of ₱35,779.80 and SD = 3,425.61. The largest proportion of teachers (33.8%) receive ₱36,125.00, followed by those earning ₱33,947.00 (29.6%). These salary ranges correspond to typical compensation levels for public school teachers under the government salary standardization scheme. Adequate compensation may

Table 3

Other Demographic and Professional Profiles of the Teacher-Respondents

Profile		No. of Teachers	Percent
Civil Status	Separated	1	1.4
	with Live-in Partner	2	2.8
	Married	54	76.1
	Single	14	19.7
	Total	71	100.0
Gross Monthly Income	42,178.00	13	18.3
	36,125.00	24	33.8
	33,947.00	21	29.6
	31,705.00	13	18.3
	Total	71	100.0
Mean		35779.80	-
SD		3,425.61	-
Highest Educational Attainment	Doctoral Degree	1	1.4
	w/ Doctorate Unit	5	7.0
	Master's Degree	13	18.3
	w/ Master's Units	50	70.4
	Bachelor's Degree	2	2.8
	Total	71	100.0
Professional Experience	>15 years	19	26.76
	10 – 15	16	22.54
	4 – 9	24	33.80
	<3 years	12	16.90
	Total	71	100.00
	Mean	11.23	-
No. of Relevant Trainings Attended	SD	2.63	2.8
	6 – 7	2	
	4 – 5	16	22.5
	1 – 3	53	74.6
	Total	71	100.0
Mean		6.91	
SD		1.44	-

influence teachers' job satisfaction and engagement in professional development. According to the Technology Acceptance Model (TAM) developed by Fred Davis (1989), individuals' willingness to adopt technology is influenced by perceived usefulness and external facilitating conditions, including access to resources and professional opportunities supported by stable employment conditions.

In terms of highest educational attainment, the findings reveal that a large majority of the teachers (70.4%) have earned units in a master's degree, while 18.3% have completed a master's degree, 7.0% have doctoral units, and 1.4% already hold a doctoral degree, with only 2.8% holding a bachelor's degree as their highest qualification. This indicates that most respondents are actively pursuing graduate education, reflecting a strong commitment to professional growth and academic advancement. Advanced education enhances teachers' pedagogical knowledge, subject matter expertise, and technological competence. According to Mishra and Koehler (2006), effective technology integration in teaching requires the intersection of content knowledge, pedagogy, and technology, which are often strengthened through higher education and continuous professional learning.

In terms of professional experience, the respondents reported an average of 11.23 years of teaching experience (SD = 2.63). The largest group of teachers (33.80%) has 4–9 years of experience, followed by 26.76% with more than 15 years, 22.54% with 10–15 years, and 16.90% with less than 3 years of teaching experience. This distribution suggests that many respondents are experienced educators who have developed substantial classroom practices and instructional strategies. Experience plays an important role in shaping teachers' pedagogical decisions and their ability to integrate technology meaningfully into instruction.

Finally, regarding the number of relevant trainings attended, most teachers (74.6%) have attended 1–3 trainings, while fewer have reported attending 4–5 or 6–7 trainings. The mean number of training sessions attended is 6.91 with $SD = 1.44$, indicating variation in teachers' participation in relevant professional development activities. Training programs are essential in enhancing teachers' technological and pedagogical competencies, particularly in skill-based subjects such as TLE. Professional development initiatives provide opportunities for teachers to develop technological knowledge and instructional strategies aligned with the TPACK framework, which emphasizes the integration of technology, pedagogy, and content knowledge in effective teaching practices.

Relationship Between Teachers' Level of Utilization of the Pedagogy in TLE

Table 5 presents the relationship between selected teacher profile variables and their level of utilization of teaching–learning pedagogies in Technology and Livelihood Education (TLE). The results show that age ($r = -.084$, $p = .484$), sex ($r = .097$, $p = .420$), civil status ($V = .208$, $p = .216$), gross family monthly income ($r = -.208$, $p = .082$), teaching experience ($r = -.150$, $p = .213$), and number of relevant in-service trainings and seminars attended ($r = -.059$, $p = .623$) all yielded p -values greater than 0.05, indicating no statistically significant relationship with teachers' level of pedagogy utilization. Highest educational attainment also yielded a p -value greater than 0.05 ($r = -.214$, $p = .053$). Therefore, none of the examined demographic and professional variables demonstrated a statistically significant relationship with teachers' level of pedagogy utilization at the 0.05 level.

Table 5

Relationship Between Teachers' Level of Utilization of the Pedagogy in TLE

Profile	Coefficient	p-value	Evaluation
¹ Age	-.084	.484	Not Significant
² Sex	.097	.420	Not Significant
³ Civil Status	.208	.216	Not Significant
¹ Gross Family Monthly Income	-.208	.082	Not Significant
¹ Highest Educational Attainment	-.214	.053	Not Significant
¹ No. of Teaching Experience	-.150	.213	Not Significant
¹ No. of Relevant In-Service Training and Seminars Attended	-.059	.623	Not Significant

Legend: Significant at $p < 0.05$; 1 – Spearman Rho; 2 – Point-Biserial; 3 – Cramer's V

Previous studies suggest that demographic characteristics such as age, sex, and experience do not necessarily determine teachers' instructional practices because effective teaching is more strongly influenced by pedagogical knowledge and professional competence (Mishra & Koehler, 2006).

The result may also indicate that teachers adopt teaching strategies based on instructional needs rather than personal characteristics. In technical-vocational subjects such as TLE, teaching methods are often determined by the competencies being taught and the practical nature of the learning tasks. Teachers tend to select pedagogical approaches that best facilitate skill development, regardless of their demographic profile. This finding supports the Technology Acceptance Model (TAM) proposed by Davis (1989), which emphasizes that individuals' use of technology and instructional methods is influenced more by perceived usefulness and ease of use rather than by demographic factors.

Highest educational attainment showed a weak negative relationship with teachers' level of pedagogy utilization ($r = -.214$); however, the relationship was not statistically significant at the 0.05 level ($p = .053$). Therefore, the result does not provide sufficient statistical evidence to conclude that educational attainment significantly influences teachers' utilization of instructional strategies in TLE. The direction of the relationship



should also be interpreted with reference to the coding scheme used for educational attainment. Without the raw data and the exact coding scheme, the negative direction should not be interpreted as evidence that higher educational attainment is associated with lower pedagogical utilization.

Overall, the findings indicate that the selected demographic and professional characteristics did not show statistically significant relationships with teachers' utilization of pedagogical approaches in TLE. The non-significant result for educational attainment ($r = -.214$, $p = .053$) suggests that any observed association in the sample was not strong enough to meet the study's $\alpha = .05$ criterion. Thus, the findings support retaining the null hypothesis for the tested relationships.

CONCLUSIONS

The following are the conclusions drawn based on the findings of the study:

1. TLE teachers generally possess adequate professional maturity and are engaged in continuous professional development, which may support the effective implementation of competency-based TLE instruction.
2. TLE instruction largely emphasizes demonstration, guided practice, and experiential learning, which are essential in technical-vocational education.
3. TLE teachers consistently apply appropriate instructional strategies to facilitate the TLE teachers consistently apply appropriate instructional strategies to facilitate the development of learners' technical skills and practical competencies.
4. The demographic and professional characteristics examined in the study, including age, sex, civil status, gross monthly income, teaching experience, number of relevant trainings and seminars, and highest educational attainment, did not demonstrate statistically significant relationships with teachers' level of pedagogy utilization at the 0.05 level. Although educational attainment showed a weak negative relationship with pedagogy utilization ($r = -.214$), the relationship was not statistically significant ($p = .053$).

RECOMMENDATIONS

Based on the conclusions drawn from the findings of the study, the following recommendations are proposed:

1. School administrators and education policymakers may continue to support the continuous professional development of TLE teachers through relevant seminars, training programs, graduate studies, and other capacity-building activities related to pedagogy, technical skills, and technology integration. These initiatives are recommended as opportunities for professional growth; however, the present study did not establish a statistically significant relationship between educational attainment or number of relevant trainings and teachers' utilization of pedagogical approaches.
2. TLE teachers may continue to integrate a variety of teaching strategies such as direct instruction, inquiry-based learning, scaffolding, role-playing, and authentic assessment to improve the delivery of competency-based instruction. The use of multiple pedagogical approaches may further enhance students' understanding, technical skills, and practical learning experiences.
3. Schools and educational institutions may strengthen the provision of instructional resources, laboratory facilities, and technology-based learning tools to support the effective implementation of TLE competencies. Adequate instructional materials and equipment may help teachers apply appropriate pedagogical strategies and provide meaningful hands-on learning opportunities for students.
4. Curriculum developers and TLE program coordinators may consider integrating direct instruction, inquiry-based learning, scaffolding, role-playing, and authentic assessment pedagogies in teaching-learning activities for TLE subjects. These pedagogies may help enhance the quality, relevance, and effectiveness of TLE teaching and learning.



5. Future researchers may provide empirical evidence on the utilization of various pedagogical approaches in TLE/TVL instruction. Future studies may use larger samples and retain individual-level raw data to permit complete statistical audits and more detailed analysis of relationships between teacher characteristics and pedagogical utilization. The findings can be used as a baseline for comparative studies, validation of related instructional theories, and further exploration of effective teaching strategies in technical-vocational education approaches in TLE/TVL instruction. The findings can be used as a baseline for comparative studies, validation of related 75 instructional theories, and further exploration of effective teaching strategies in technical-vocational education. Additionally, it may guide future research in identifying instructional gaps and developing enhanced or innovative pedagogical interventions to improve teaching and learning outcomes in similar contexts.

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