Digital Competence and School Resources on Instructional Delivery of Technology and Livelihood Education (TLE) Teachers

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ABSTRACT

This study aimed to determine the relationship between digital competencies, school resources, and the instructional delivery of Technology and Livelihood Education teachers in the Division of Valencia City during the 2025-2026 school year. The research employed a descriptive-correlational design and collected data from the teaching staff using a survey instrument to assess technical proficiencies and institutional support systems. The findings revealed that teachers possess a high level of digital competency, particularly in using digital resources, although empowering students through digital creativity remained the lowest-scoring domain. School resources were rated as adequate, with Information and Communications Technology equipment being the most sufficient, while physical laboratory infrastructure was identified as the weakest area. Statistical analysis established a strong positive correlation between digital competencies and instructional delivery, alongside a moderate positive relationship regarding school resources. Regression analysis further demonstrated that the ability to evaluate and assess, combined with the availability of functional ICT hardware, served as the primary predictors of teaching success, explaining over sixty percent of the variance in instructional performance. It was concluded that strengthening personal digital proficiency and ensuring targeted resource access are critical for maintaining instructional excellence. The study recommends that the Department of Education prioritize specialized training in digital assessment and modernize physical workshops to bridge the gap between digital theory and practical vocational mastery.

Keywords: Digital Competencies, School Resources, Instructional Delivery, TLE Teachers, Descriptive-Correlational Research, Valencia City, ICT Resources.

INTRODUCTION

Teaching is fundamentally defined as a deliberate and situated activity performed by educators and specifically oriented toward producing learning (Bardelli, 2022). It is a collaborative activity involving complex communication and interaction intended to impart knowledge, skills, and values to learners (Movahhed, 2021). Within this professional practice, instructional delivery serves as the critical pedagogical execution of teaching. It encompasses the various methods, techniques, and technical resources an educator employs in the classroom to facilitate the effective acquisition of knowledge and the achievement of lesson objectives (Anorue et al., 2023). In contemporary educational settings, teachers have evolved from being mere providers of knowledge to becoming dynamic facilitators of learning (Saeed, 2017). Today's teachers are expected to be technologically proficient and highly adaptive, capable of navigating rapid technological changes while managing diverse student needs, thereby ensuring that the delivery of 21st-century skills remains relevant and effective (Soipimai & Sanrattana, 2023).

The execution of instructional delivery is frequently hampered by systemic hurdles across various educational landscapes. Research indicates that maintaining high-quality digital content is often time-consuming and expensive ("Digital Learning Interventions in Higher Education: A Scoping Review," 2020), while teachers frequently face student-related issues such as plagiarism during technology-mediated delivery (Madkour & Alaskar, 2024). Additionally, some educational systems continue to struggle with teacher-oriented curricula that

lack the flexibility needed to align with 21st-century problem-solving and communication standards (Hamdani & Puspita, 2022). Within the Philippine educational framework, the provision of quality instruction is often hindered by inadequate facilities, tools, and equipment that fail to meet the rigorous standards required for Technology and Livelihood Education (Barcelona et al., 2023; Ramos, 2021). Teachers are frequently burdened by a lack of continuous professional development, excessive academic workloads, and the challenge of teaching subjects outside their area of specialization, which significantly compromises learning outcomes. Investigations in the Division of Catanduanes indicate that resource availability remains a serious implementation challenge (Hamoc, 2024). Similarly, research in Pangasinan points to gaps in curriculum and faculty development for modern learning skills (Sicuan et al., 2024), while reports from Naval, Biliran highlight a persistent shortage of specialized laboratory materials, tools, and workshop areas essential for practical skill acquisition. These systemic gaps in resources and training directly impact on the efficiency of instructional delivery across various divisions, including Davao del Norte, Sorsogon, and Northern Samar (Casane, 2025; Tan, 2021).

Digital competence has emerged as an indispensable requirement in the 21st-century educational landscape, extending beyond basic technical proficiency to include the successful alignment of technology, pedagogy, and content knowledge (Nguyen & Habók, 2023). Its importance is particularly pronounced in technical-vocational education, where it serves as a critical factor in modernizing instructional practices and fostering student engagement through the integration of digital learning tools like presentation software and learning management systems (Ayala & Andal, 2025). By developing these skills, teachers become more versatile and competitive, as digital literacy supports their ability to provide diverse and enriched learning experiences that traditional methods alone cannot achieve (Оракова et al., 2024). Furthermore, high digital proficiency is essential for teachers to serve as digital role models, preparing students to meet the rigorous demands of a globalized, tech-driven society (Nguyen & Habók, 2023).

The enhancement of digital competence acts as a strategic solution for improving the overall status of instructional delivery by bridging the gap between traditional teaching and modern pedagogical needs. Research findings indicate that targeted ICT enhancement programs can significantly elevate the pedagogical competencies of TLE teachers, particularly in non-urban settings, by directly addressing gaps in technical training and specialization (Biray et al., 2024). High levels of digital literacy allow educators to move away from traditional styles toward dynamic digital methods that facilitate the effective utilization of Information Communication Technology (Hassan & Mirza, 2021). Moreover, the integration of digital literacy has been found to generate vitality in complex educational environments, as teachers who recognize the value of these competencies are statistically more likely to integrate advanced technology into their daily teaching tasks (Mehmood, 2023). Consequently, strengthening digital competence is vital for transforming instructional delivery into a student-centered process that successfully merges hands-on technical education with emerging digital strategies (Ayala & Andal, 2025).

School resources constitute the comprehensive array of inputs—including human, physical, financial, and material assets, that serve as the foundational support system enabling effective teaching and learning processes (Mncube et al., 2023; Oshionebo & Abiodun, 2022). The importance of these resources lies in their pivotal role in curriculum implementation and their capacity to shape a conducive educational environment (Mncube et al., 2023). Educational facilities, defined as the entire school plant that teachers and students harness to facilitate efficient management, act as physical and spatial enablers of teaching and learning, directly influencing the quality of education (Onyebuchi, 2017). Research demonstrates that school facilities are potent factors contributing to academic achievement, as their availability, relevance, and adequacy significantly enhance the learning process through resources such as buildings, classrooms, libraries, laboratories, and instructional materials (Umeji, 2020). Furthermore, comfortable classroom environments, particularly regarding temperature and noise levels, can impact student performance and attention (Hao & Florez-Perez, 2021), while physical improvements greatly enhance the teaching effectiveness of educators.

The adequate provision of school resources offers a strategic pathway to solving the systemic challenges that currently hinder instructional delivery. Studies have established a critical link between the sufficiency of instructional resources and student performance outcomes, and findings indicate significant correlations across all domains, including textbooks, laboratory equipment, technology, physical facilities, and human resources (Embodo & Alonzo, 2024). Entrepreneurial skills and sustainable technological development cannot be achieved if school workshops are devoid of adequate facilities and resources, making the procurement of tools, materials,

and equipment a fundamental requirement for technical-vocational education (Ramos, 2021). Moreover, empirical research on educational resource allocation has shown that expenditures for instruction and instructional support are positively related and statistically significant for student achievement, suggesting that strategic investments in learning resources directly translate to improved performance (Baker et al., 2018). Consequently, addressing the scarcity of functional tools, equipment, and laboratory spaces through targeted resource allocation ensures that teachers can effectively execute competency-based instruction, thereby elevating the overall quality and practical relevance of technical education (Jacolbia, 2016; Maed & Joseph, 2026).

Given the persistent challenges in instructional delivery and the critical roles of digital competence and school resources, there is a compelling need to conduct this research to bridge the gap between theoretical frameworks and practical realities in Technology and Livelihood Education. While existing studies have identified various problems and explored individual factors, there remains a scarcity of comprehensive investigations that simultaneously examine the interplay between digital competence and school resources as determinants of instructional delivery quality (Pettersson & Pettersson, 2017). This research is necessary because the work of teaching is inherently complex and situated, requiring a nuanced understanding of how multiple variables converge to influence learning outcomes (Nückles, 2020). Furthermore, the rapid evolution of 21st-century educational demands necessitates continuous inquiry into how teachers can be better supported to adapt their instructional practices to meet contemporary standards (Lingam et al., 2017).

The primary purpose of this study is to generate empirical evidence that will inform educational policies and professional development programs aimed at enhancing the effectiveness of TLE instruction. By investigating the relationship between digital competence, school resources, and instructional delivery, this research seeks to provide actionable insights that can help school administrators and policymakers make data-driven decisions regarding resource allocation and teacher training initiatives. The study also aims to contribute to the growing body of knowledge on how disciplinary culture and effective teaching practices intersect in vocational education settings. Ultimately, this research endeavors to develop a framework for improving instructional delivery that addresses both the technological and infrastructural needs of TLE teachers, thereby ensuring that students receive quality education that prepares them for the demands of the modern workforce.

Objectives of the Study

The primary objective of this study was to investigate the relationship between digital competencies, school resources, and instructional delivery among Technology and Livelihood Education (TLE) secondary school teachers in Valencia City during the 2025-2026 school year. Specifically, it aimed to 1.) Assess the level of digital competencies among TLE teachers, 2.) Describe the level of school resources available to TLE teachers, 3.) Determine the level of instructional delivery among TLE teachers, 4.) Determine the significant relationships between instructional delivery and Digital Competencies and School Resources, and 5.) Determine the variable, either independently or in combination, that served as the most effective predictor of instructional delivery among TLE teachers.

METHODOLOGY

Respondents

The population that participated in this study was composed of 200 Technology and Livelihood Education (TLE) secondary school teachers in all the districts of the Division of Valencia City. The selection provided a holistic perspective of the impact of digital competencies and school resources on instructional delivery at the whole Division level.

The participants were restricted to TLE teachers in secondary public schools, so that there would be a wide range of representation of the various schools in terms of size, experience, and teaching conditions in the city of Valencia Division, Northern Mindanao, Philippines.

Research Design

In this study, a descriptive-correlational research design was employed. Descriptive methods were used to assess the levels of digital competencies, school resources, and instructional delivery among Technology and Livelihood Education (TLE) teachers. Additionally, a correlational research design was utilized to determine the relationships between the independent variables (digital competencies and school resources) and the dependent variable (instructional delivery). Furthermore, the study aimed to identify which variables, either singly or in combination, were the most effective predictors influencing TLE teachers' instructional delivery

Instrument

The instruments used in this study were all adapted to assess the levels of digital competencies, school resources, and instructional delivery among Technology and Livelihood Education (TLE) teachers. The questionnaire consists of three main parts that will capture teachers' perceptions and experiences regarding these constructions. Part I: Digital Competencies Questionnaire, adapted from Arık Güngör et al. (2025), measures six dimensions (Empowering Students, Developing Students' Digital Competence, Managing the Teaching-Learning Process, Using Digital Resources, Ensuring Professional Engagement, and Ability to Evaluate and Assess) using a 5-point Likert scale (1-Strongly Disagree to 5-Strongly Agree). Part II: School Resources, adapted from Navarro (2019), evaluates Physical Infrastructure, Teaching Materials, and Digital Device and ICT equipment using a 5-point Likert scale (1-Strongly Disagree to 5-Strongly Agree). Part III: Instructional Delivery, adapted from Graham et al. (2019), assessed Planning, Instructional Methods and Strategies, Assessment and Evaluation, and Management using a 5-point frequency scale (1-Strongly Disagree to 5-Strongly Agree).

The instruments underwent reliability testing through pilot testing, demonstrating high internal consistency with Cronbach's alpha values of .92 for Digital Competencies, .89 for School Resources, and .94 for Instructional Delivery, confirming their suitability for the study. These reliability coefficients indicated strong instrument stability for measuring the constructs among TLE teachers.

The questionnaire was distributed in printed format to accommodate respondents' preferences and ensure accessibility across different school settings. Clear instructions accompanied each section to guide proper completion. Using these validated and reliable adapted instruments, the study generated robust data essential to understanding the relationships among digital competencies, school resources, and instructional delivery effectiveness among TLE teachers.

Statistical Analysis

After data collection, the researcher encoded the responses into a digital database for clean and organized analysis. Descriptive statistics were used first to summarize the data, including frequency and percentage for the respondents’ profile, and weighted mean and standard deviation for the main variables. This allowed for the assessment of digital competence, school resources, and instructional delivery.

To determine relationships among the variables, correlation and multiple regression analyses were used. These tests identified the strength of the associations and the predictors of instructional delivery among TLE teachers. All tests were done at the 0.05 level of significance, and the results were presented in tables and figures for clear interpretation.

RESULTS AND DISCUSSION

This section presents the interpretation and analysis of the data gathered, a discussion of the results, and the studies that support the results of the recent study.

Summary of Digital Competencies

The following summary provides a comprehensive overview of the digital competence levels across all six domains assessed in this study. This consolidated data allows for a holistic evaluation of the Technology and Livelihood Education teachers' readiness to integrate technology into their instructional delivery and identifies the specific areas where technical and pedagogical support is most needed.

Table 1: Summary of Digital Competencies Component

Indicator	**Mean**	**Descriptive Rating**	**Qualitative Interpretation**
Empowering Students	3.81	Agree (A)	Competent
Developing Students' Digital Competence	4.07	Agree (A)	Competent
Managing the Teaching-Learning Process	4.10	Agree (A)	Competent
Using Digital Resources	4.17	Agree (A)	Competent
Ensuring Professional Engagement	3.90	Agree (A)	Competent
Ability to Evaluate and Assess	3.83	Agree (A)	Competent
Overall Mean	**3.98**	**Agree (A)**	**Competent**

Legend:

Scale	**Range**	**Descriptive Rating**	**Qualitative Interpretation**
5	4.21-5.00	Strongly Agree (SA)	Highly Competent
4	3.42-4.20	Agree (A)	Competent
3	2.61-3.40	Neutral (N)	Moderately Competent
2	1.81-2.60	Disagree (D)	Slightly Competent
1	1.00-1.80	Strongly Disagree (SD)	Not Competent

As illustrated in Table 1, the TLE teachers achieved an overall mean score of 3.98, which carries a descriptive rating of "Agree" and a qualitative interpretation of "Competent." This finding indicates a solid foundation of digital literacy among the respondents, positioning them as "Integrators" or "Explorers" who are capable of using technology to support traditional teaching methods (Suzer & Koç, 2024). This "Competent" rating is consistent with international observations that teachers often possess moderate levels of digital competence based on self-perception, particularly in basic technological literacy and social communication (Gómez-Pablos et al., 2022; Li et al., 2022).

The overall mean score of 3.98 in this study is notably higher than scores found in similar vocational contexts in Jordan and rural Indonesia, where teachers reported "Low" levels of technological competence due to a lack of specialized training and equipment (Ajlouni et al., 2023; Mutohhari et al., 2021; Soekamto et al., 2022). However, it is slightly lower than the "Very High" digital competence levels reported in localized studies within the Philippines, such as in Lapu-Lapu City, where more intensive professional development may have been implemented (Aying, 2026). This suggests that while the present study's respondents are capable, there is still significant room to elevate their performance from "Competent" to "Highly Competent."

A comparative analysis of the domains reveals that Using Digital Resources earned the highest mean score of 4.17. This reflects a strength in technical proficiency and the ability to manage digital materials, which is often the most developed area of digital competence for in-service teachers (Li et al., 2022). Conversely, the lowest scores were recorded in Empowering Students (mean score of 3.81) and the Ability to Evaluate and Assess (mean score of 3.83). These findings align with current research suggesting that while teachers are technically proficient, they often struggle with the "epistemological" and "pedagogical" aspects of technology—specifically,

how to use digital tools to differentiate instruction or foster student-led problem-solving (Gómez-Pablos et al., 2022; Khateeb, 2017).

From an educational administration perspective, these results highlight a "digital gap" between operational competence (managing resources and processes) and pedagogical transformation (empowering and assessing students). To bridge this gap, institutional support must move beyond basic ICT literacy and focus on "pedagogical compatibility", training teachers on how to integrate digital tools specifically to enhance critical thinking and student agency (Khateeb, 2017; Оракова et al., 2024). As teachers progress in their digital journey, factors such as years of service and access to continuous professional development will be crucial in moving the entire faculty toward a "Highly Competent" profile (Aying, 2026; Reyes & Gurubel-Tec, 2024).

Summary of School Resources

The overall assessment of school resources provides a comprehensive view of the environment in which Technology and Livelihood Education teachers operate. By synthesizing the adequacy of physical infrastructure, teaching materials, and ICT resources, this summary highlights the multifaceted nature of the support systems required for effective technical and vocational instruction. The following table summarizes the mean scores across these three critical domains.

Table 2: Summary of School Resources Component

Indicator	**Mean**	**Descriptive Rating**	**Qualitative Interpretation**
Physical Infrastructure	3.60	Agree (A)	Adequate
Teaching Materials	3.73	Agree (A)	Adequate
Ict Resources	3.92	Agree (A)	Adequate
Overall Mean	**3.75**	**Agree (A)**	**Adequate**

Legend:

Scale	**Range**	**Descriptive Rating**	**Qualitative Interpretation**
5	4.21-5.00	Strongly Agree (SA)	Highly Adequate
4	3.42-4.20	Agree (A)	Adequate
3	2.61-3.40	Neutral (N)	Moderately Adequate
2	1.81-2.60	Disagree (D)	Slightly Adequate
1	1.00-1.80	Strongly Disagree (SD)	Not Adequate

The summary of results reveals an overall mean score of 3.75 for school resources, corresponding to a descriptive rating of “Agree” and a qualitative interpretation of “Adequate.” This indicates that collectively, the schools have established a sufficient foundation of physical, instructional, and digital assets to facilitate the delivery of the TLE curriculum. The finding that resources are generally adequate is significant, as resource adequacy and its subsequent utilization are major determinants of teaching and learning effectiveness in vocational education programs (Edokpolor, 2019; Edokpolor & Dumbiri, 2019).

A comparative analysis of the three domains shows that ICT Resources obtained the highest mean score of 3.92. This suggests a strong institutional emphasis on digital transformation, likely driven by recent educational

reforms and the global shift toward "Education 4.0" in the Philippines (Barrot, 2021; Eslit, 2023). The high level of adequacy in ICT resources—such as hardware, internet connectivity, and digital learning materials—provides TLE teachers with the necessary tools to integrate modern technology into their pedagogy, which is essential for developing the digital competencies required in today's workforce (Cattáneo et al., 2021; Regli et al., 2026).

Teaching Materials followed with a mean score of 3.73. This adequate rating confirms that teachers are equipped with a balanced mix of traditional and modern instructional aids, ranging from basic school supplies to subject-specific tools. The adequacy of these materials is vital, as the specific nature of TLE requires tangible resources to bridge the gap between abstract technical concepts and practical skill application (Embodo & Alonzo, 2024; Pamor et al., 2024).

Physical Infrastructure, while still rated as "Adequate," received the lowest mean score of 3.60. This relatively lower score, particularly when compared to ICT resources, may suggest that while digital tools are being prioritized, the physical "brick and mortar" facilities—such as specialized TLE laboratories and workshops—may not be receiving the same level of intensive investment or maintenance. Literature in vocational education often highlights that the inadequacy of specialized physical spaces can limit the extent to which students can perform hands-on tasks, even when digital simulations are available (Edokpolor, 2019).

The "Adequate" overall mean score suggests that the schools are well-positioned to support instructional delivery. However, the variance between the high adequacy of ICT and the more baseline adequacy of physical infrastructure indicates a need for a more holistic approach to resource management. Ensuring that physical facilities keep pace with technological advancements is crucial for a well-rounded TLE program that remains responsive to the practical and digital demands of vocational education (Edokpolor & Dumbiri, 2019; Embodo & Alonzo, 2024).

Summary of Instructional Delivery

The following summary provides a comprehensive overview of the instructional delivery levels across the various pedagogical dimensions assessed in this study. This consolidated data allows for a holistic evaluation of the Technology and Livelihood Education teachers' effectiveness in executing blended learning strategies and identifies the critical phases of the teaching-learning process where instructional and technical refinement is most required.

Table 3: Summary of Instructional Delivery Component

Indicator	**Mean**	**Descriptive Rating**	**Qualitative Interpretation**
Planning	4.17	Agree (A)	Effective
Instructional Methods and Strategies	4.10	Agree (A)	Effective
Assessment and Evaluation	4.14	Agree (A)	Effective
Management	4.13	Agree (A)	Effective
Overall Mean	**4.14**	**Agree (A)**	**Effective**

Legend:

Scale	**Range**	**Descriptive Rating**	**Qualitative Interpretation**
5	4.21-5.00	Strongly Agree (SA)	Highly Effective
4	3.42-4.20	Agree (A)	Effective
3	2.61-3.40	Neutral (N)	Moderately Effective

2	1.81-2.60	Disagree (D)	Slightly Effective
1	1.00-1.80	Strongly Disagree (SD)	Not Effective

The summary data in Table 3 reflect a consistent and balanced level of performance among TLE teachers, with an overall mean score of 4.14, qualitatively interpreted as "Effective." This result indicates that while the sudden shift to digital and blended modalities presented significant challenges, TLE educators in the Philippines have successfully adapted their pedagogical practices to meet the basic requirements of modern instruction (Nuñeza, 2024; Tingzon & Buyok, 2022). The "Effective" rating across all four domains suggests that teachers possess the foundational technological-pedagogical-content knowledge needed to sustain learning continuity (Tijtgat, 2025).

Planning emerged as the highest-rated domain with a mean score of 4.17. This indicates that TLE teachers are most proficient in the preparatory stages of instruction, such as aligning learning objectives with digital resources and sequencing activities for online delivery.

This strength is often attributed to the rigorous focus on instructional planning within the Philippine Professional Standards for Teachers, which has historically emphasized readiness in terms of content knowledge and curriculum alignment (Jorilla & Bual, 2021; Magulod et al., 2020). However, the slightly lower (though still effective) scores in other domains suggest that the transition from planning to actual implementation and management in a digital space involves additional layers of complexity (Anoba & Cahapay, 2020).

Instructional Methods and Strategies obtained the lowest mean score of 4.10. This finding aligns with contemporary research highlighting that TLE, being a skill-based and hands-on subject, is particularly difficult to deliver through purely digital or modular platforms (Code et al., 2021; Keche, 2021).

Teachers often face a "technical literacy" gap that ranges from beginning to developing levels, which can hinder the seamless execution of interactive online strategies (Anzari et al., 2021; Fernando & Jain, 2022). Furthermore, the lack of specialized tools and high-quality digital equipment often forces teachers to rely on more traditional or less interactive methods, which may not fully engage students in the same way as on-site laboratory experiences (Alegre, 2023; Nqoma, 2024).

The domains of Assessment and Evaluation (mean score of 4.14) and Management (mean score of 4.13) demonstrate that teachers are finding ways to navigate the "new normal." While they are effective at establishing guidelines and using data to identify learning gaps, they are still limited by external factors such as poor internet connectivity and inadequate infrastructure (Linhalis & Silva, 2023; Mrutu et al., 2023). To elevate these scores to a "Highly Effective" status, there is a clear need for continuous professional development that specifically targets the integration of innovative digital tools and advanced data-driven pedagogical approaches (Qazi & Pachler, 2024; Yadav, 2025). Ultimately, while TLE teachers have proven to be resilient and competent, institutional support in the form of updated facilities and targeted technical training remains crucial for further improving instructional delivery (Akintayo et al., 2024; Mack, 2024).

Correlation between Digital Competencies and School Resources

The following section presents the correlational analysis between the independent variables, Digital Competencies and School Resources, and the instructional delivery of TLE teachers. This analysis aims to determine the strength and significance of the relationships between these factors and how they collectively influence the pedagogical processes in a technology-driven educational environment.

Table 4: Correlation Analysis

Independent Variable	R-Value	PROBABILITY

Digital Competencies	.620	.000**
Empowering Students	.423**	.000
Developing Students' Digital Competence	.533	.000**
Managing The Teaching-Learning Process	.330	.000**
Using Digital Resources	.511	.000**
Ensuring Professional Engagement	.366	.000**
Ability To Evaluate and Assess	.631	.000**
School Resources	.390	.000**
Physical Infrastructure	.298	.000**
Teaching Materials	.266	.000**
Ict Resources	.485	.000**

** Correlation is significant at the 0.01 level (2-tailed).

The findings revealed a strong and highly significant positive correlation between the overall digital competencies of TLE teachers and their instructional delivery, with an r-value of 0.620 and a p-value of 0.01. This suggests that as teachers become more digitally competent, their effectiveness in delivering TLE instruction significantly improves. Among the various dimensions, the ability to evaluate and assess showed the highest correlation, with an r-value of 0.631, indicating that teachers who can effectively use digital tools to monitor and assess student progress are more successful in their instructional roles (González-Medina et al., 2025). This aligns with recent research suggesting that digital teaching competence is a direct predictor of improved instructional quality and student empowerment (Maghfiroh et al., 2023; Runge et al., 2023).

Furthermore, developing students' digital competence, with an r-value of 0.533, and using digital resources, with an r-value of 0.511, also demonstrated significant relationships with instructional delivery. This highlights the importance of TLE teachers not only being proficient in technology themselves, but also capable of fostering these skills in their students to enhance the learning process (Cadiz et al., 2024; Coşkunserçe & Aydoğdu, 2022). Effective instructional delivery in the modern TLE classroom is increasingly dependent on the teacher's ability to integrate digital tools into the pedagogy rather than just using them as supplementary aids (Cabellos et al., 2023; Excelise & Marapao, 2025).

A moderate but significant positive correlation was observed between school resources and instructional delivery, with an r-value of 0.390 and a p-value of 0.01. This implies that the availability and sufficiency of institutional support and materials play a critical role in how TLE teachers carry out their lessons (Embodo & Alonzo, 2024; Maed & Joseph, 2026). Within this category, ICT resources had the strongest impact, with an r-value of 0.485, underscoring that specialized digital tools, internet connectivity, and computer laboratories are indispensable for TLE subjects that require technical application (Barcelona et al., 2023; Edokpolor & Dumbiri, 2019).

While physical infrastructure, with an r-value of 0.298, and teaching materials, with an r-value of 0.266, also showed significant correlations, their values were lower than those of digital competencies and ICT resources. This suggests that while physical facilities like workshops and laboratories are necessary, the teacher's digital proficiency often plays a more decisive role in overcoming resource limitations to ensure effective delivery (Excelise & Marapao, 2025; Pettersson & Pettersson, 2017). Ultimately, the data indicate that a synergy between high digital competence and adequate ICT resources provides the most conducive environment for superior

instructional delivery in Technology and Livelihood Education (Barcelona et al., 2023; Embodo & Alonzo, 2024).

Regression Analysis of the Variables

The following section details the regression analysis performed to identify the significant predictors of instructional delivery among Technology and Livelihood Education teachers. This analysis determines how much of the variance in teaching effectiveness is accounted for by specific dimensions of digital competence and the availability of school resources.

Table 5: Regression Analysis

	Unstandardized Coefficients		Standardized Coefficients		
Predictor Variables	B	Std. Error	Beta	T	Sig.
(Constant)	.498	.247		2.015	.045
Ability To Evaluate and Assess	.434	.066	.430	6.558	.000
Developing Students' Digital Competence	.225	.049	.245	4.637	.000
Managing The Teaching-Learning Process	-.160	.058	-.161	-2.773	.006
Using Digital Resources	.163	.059	.164	2.750	.007
Ict Resources	.264	.036	.346	7.357	.000
R =.775 R2 =.601 F-Value = 58.362 Probability=.000					

The regression results indicate that the combination of digital competencies and ICT resources significantly predicts the instructional delivery of TLE teachers. The model produced an r-value of 0.775 and an r-squared value of 0.601, suggesting that 60.1 percent of the variance in instructional delivery is explained by the predictors included in the study. The f-value of 58.362, with a p-value of 0.001, confirms the model's overall statistical significance. The constant term of 0.498, with a t-value of 2.015 and a p-value of 0.045, represents the baseline instructional delivery, suggesting that teachers maintain a foundational level of effectiveness even when specialized digital factors are at a minimum (Cabellos et al., 2023; González-Medina et al., 2025).

The ability to evaluate and assess emerged as the most powerful predictor in the model, with a standardized beta coefficient of 0.430, a t-value of 6.558, and a p-value of 0.001. This indicates that for every one-unit increase in this competency, instructional delivery improves by 0.434 units. In TLE, where practical skills must be measured accurately, mastery of digital assessment tools is essential for high-quality instruction (Aying, 2026; Runge et al., 2023). This is supported by research indicating that digital assessment literacy is a primary driver of pedagogical quality in technology-enhanced environments (Maghfiroh et al., 2023).

ICT resources also showed a substantial impact, with a standardized beta coefficient of 0.346, a t-value of 7.357, and a p-value of 0.001, with each unit increase enhancing delivery by 0.264 units. This reinforces the necessity of physical infrastructure—such as computers and internet connectivity—as a prerequisite for effective TLE instruction (Edokpolor & Dumbiri, 2019; Embodo & Alonzo, 2024). Without these resources, even highly skilled teachers may struggle to provide the hands-on experience required by the curriculum (Barcelona et al., 2023; Maed & Joseph, 2026).

Additional positive effects were found for developing students' digital competence, with a standardized beta coefficient of 0.245, a t-value of 4.637, and a p-value of 0.001, and for using digital resources, with a

standardized beta coefficient of 0.164, a t-value of 2.750, and a p-value of 0.007. These results suggest that focusing on student empowerment and the integration of digital materials directly supports a more effective blended learning delivery in the TLE context (Biray et al., 2024; Tutica, 2024). Conversely, managing the teaching-learning process yielded a negative unstandardized coefficient of −0.160 and a standardized beta coefficient of −0.161, with a p-value of 0.006, which may imply that rigid, traditional management styles could potentially hinder the flexibility required for tech-integrated lessons (Excelise & Marapao, 2025; Pettersson & Pettersson, 2017).Based on the unstandardized coefficients (B) from Table 18, the equation to predict instructional delivery (Y) is:

Y = 0.498 + 0.434(X1) + 0.225(X2) - 0.160(X3) + 0.163(X4) + 0.264(X5)

Where:

Y = Instructional Delivery

X1 = Ability to E valuate and Assess

X2 = Developing Students' Digital Competence

X3 = Managing the Teaching-Learning Process

X4 = Using Digital Resources

X5 = ICT Resources

As the model demonstrates, the null hypothesis stating that no single variable or combination of variables predicts instructional delivery is rejected. For educational administrators, these findings suggest that the highest returns on instructional quality come from prioritizing teacher training in digital evaluation skills (Meisuri et al., 2024) and ensuring the sufficiency of ICT devices (Meriyanti & Jasmina, 2022). Future interventions should focus on the synergy between these digital skills and technical resources to maximize vocational education effectiveness (Vasilev, 2024).

CONCLUSION

The Technology and Livelihood Education teachers in the Division of Valencia City possess a solid foundation of digital literacy, positioning them as capable integrators of technology in the vocational classroom. While they are highly proficient in curating existing digital materials and managing institutional communication, they face a "pedagogical gap" in higher-order digital tasks. Specifically, while teachers can effectively use technology to support traditional methods, their ability to empower students through original digital content creation and advanced student-led problem-solving remains an area for growth. This indicates that while teachers have mastered the "operational" side of technology, the transition to fully "transformational" digital pedagogy, where students are given full agency over their digital learning, is still in progress.

Regarding school resources, the findings reveal a strategic but uneven investment in educational infrastructure. The high adequacy of ICT hardware and internet connectivity suggests that schools have successfully established the "digital backbone" necessary for modern vocational training. However, the relatively lower adequacy of specialized physical laboratories and workshops indicates a persistent focus on digital tools at the expense of the physical spaces required for hands-on technical demonstrations. This suggests that while the digital environment is ready for 21st-century instruction, the physical "brick and mortar" facilities must be modernized to prevent a disconnect between virtual simulations and real-world technical applications.

The instructional delivery of TLE teachers is characterized by high levels of resilience and preparatory excellence. Teachers demonstrate superior proficiency in instructional planning and collaborative evaluation, successfully navigating the complexities of blended learning environments. However, the slightly lower

effectiveness in instructional methods and strategies reveals that the hands-on, practical nature of TLE remains difficult to fully replicate in digital formats. This demonstrates that while TLE educators are effective at organizing and assessing lessons, the lack of specialized tools and the limitations of virtual demonstrations continue to challenge the seamless execution of interactive technical instruction.

The study further reveals that a teacher's personal digital proficiency is a far more powerful determinant of instructional success than the mere availability of physical materials. While adequate school resources provide a necessary buffer against stress, it is the teacher's ability to integrate technology, pedagogy, and content that ultimately drives the quality of education. This indicates that even in the presence of laboratory shortages or infrastructure gaps, a digitally competent teacher can leverage existing ICT tools to maintain a high standard of instructional delivery, proving that human capital remains the most critical asset in the digital transformation of vocational education.

Finally, the findings lead to the conclusion that mastery of digital assessment and access to functional ICT equipment are the primary keys to instructional excellence in TLE. The ability to use digital data to monitor student progress and the availability of hardware like computers and printers serve as the strongest predictors of how well a teacher can deliver the curriculum. Ultimately, this reveals that for TLE instruction to be truly effective in a post-pandemic landscape, institutional efforts must prioritize a synergy between high-level teacher training in data-driven evaluation and the continuous procurement of specialized technical resources. This dual focus ensures that TLE teachers are not just using technology but are using it as a precise tool for enhancing student mastery and vocational readiness. Establishing regional TLE resource hubs could address persistent infrastructure disparities across Philippine schools, enabling consistent access to essential digital tools. Policy frameworks should also mandate annual ICT audits alongside teacher competency assessments to sustain these gains over time. Collaborative partnerships with tech industry leaders would further ensure that TLE curricula remain aligned with evolving vocational skill demands in the digital economy.

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