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ICT Competence and Instructional Delivery of Technology and Livelihood Education Teachers

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Abstract: This study determined the relationship between ICT competence and instructional delivery among Junior High School Technology and Livelihood Education (TLE) teachers in the Department of Education Capiz Division during School Year 2025-2026. Anchored on the Technological Pedagogical Content Knowledge (TPACK) framework and Rogers' Diffusion of Innovations Theory, the study examined teachers' technological competence, pedagogical ICT competence, content-specific ICT competence, and attitude toward ICT, as well as their instructional delivery in terms of lesson planning, learning activities, assessment practices, and instructional innovation. The study employed a descriptive-correlational research design. The respondents were 100 Junior High School TLE teachers selected through stratified random sampling from public secondary schools in the DepEd Capiz Division. Data were gathered using a researcher-made and validated questionnaire, which obtained a Cronbach's alpha coefficient of 0.851 during pilot testing. Frequency, percentage, weighted mean, standard deviation, Pearson Product-Moment Correlation, and multiple regression analysis were used in treating the data. Findings showed that the TLE teachers had a high level of ICT competence, with a general mean of 4.20. Content-specific ICT competence and attitude toward ICT were rated very high, while technological competence and pedagogical ICT competence were rated high. Instructional delivery was rated good, with a general mean of 3.91 across lesson planning, learning activities, assessment practices, and instructional innovation. A significant moderate positive relationship was found between ICT competence and instructional delivery ($r = 0.613$, $p = 0.000$). Regression results further revealed that pedagogical ICT competence was the only significant predictor of instructional delivery (Beta = 0.735, $p = 0.000$), while technological competence, content-specific ICT competence, and attitude toward ICT were not significant predictors. The model explained 46.5 percent of the variance in instructional delivery. The study concludes that ICT competence is meaningfully associated with instructional delivery, but the pedagogical use of ICT plays the most decisive role in improving TLE teaching. It is recommended that professional development programs for TLE teachers prioritize pedagogical ICT integration, technology-supported lesson planning, assessment, and instructional innovation.

Keywords: ICT Competence, Instructional Delivery, TLE Teachers, Technology Integration, Pedagogical ICT Competence, Descriptive-Correlational Study.

I. INTRODUCTION

The rapid advancement of information and communication technology has changed the way teaching and learning are planned, delivered, and assessed. In contemporary classrooms, technology is no longer used only as an accessory to instruction; it has become an important tool for increasing learner engagement, improving access to instructional resources, and supporting flexible teaching strategies. For Technology and Livelihood Education (TLE), ICT integration is especially important because the subject requires demonstrations, skills practice, performance tasks, simulations, and contextualized learning activities that can be strengthened through digital tools.

In the Philippine basic education context, initiatives such as the Department of Education Computerization Program and digital learning programs have encouraged teachers to use technology in classroom instruction. However, the availability of technology does not automatically result in effective technology integration. Teachers need to possess the knowledge, skills, and attitudes necessary to select appropriate tools, design ICT-supported learning tasks, and use digital resources in ways that match the curriculum and learners' needs. This concern became more visible during and after the COVID-19 pandemic, when teachers were expected to adjust to online, blended, and technology-supported modalities.

Technology and Livelihood Education teachers face a distinct challenge because TLE is skills-based, performance-oriented, and practical. ICT may enhance TLE teaching through multimedia presentations, online resources, simulations, video demonstrations, digital assessment tools, and collaborative learning platforms. Still, these tools become instructionally useful only when teachers know how to combine technology with pedagogy and subject matter. This principle is consistent with the TPACK framework of Mishra and Koehler (2006), which emphasizes the interaction of technological, pedagogical, and content knowledge for effective instruction.

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The adoption of ICT also depends on teachers' attitudes, confidence, and willingness to use innovations. Rogers' Diffusion of Innovations Theory explains that new technologies are accepted and implemented depending on users' knowledge, persuasion, decision, implementation, and confirmation. In this study, the theory supports the idea that teachers' acceptance of ICT and their teaching context influence whether ICT competence is translated into classroom practice.

At the local level, the DepEd Capiz Division includes both urban and rural schools with varying levels of internet access, ICT resources, and professional development opportunities. Although studies have examined ICT integration in general education, there remains a need to understand the ICT competence of Junior High School TLE teachers in Capiz and how such competence relates to their instructional delivery. This study addressed that gap by examining ICT competence and instructional delivery among TLE teachers in the Division of Capiz.

Objectives of the Study

This study aimed to determine the relationship between the ICT competence of Junior High School TLE teachers and their instructional delivery in the DepEd Capiz Division during School Year 2025-2026. Specifically, it sought to:

1. determine the level of ICT competence of TLE teachers in terms of technological competence, pedagogical ICT competence, content-specific ICT competence, and attitude toward ICT;
2. determine the level of instructional delivery of TLE teachers in terms of lesson planning, learning activities, assessment practices, and instructional innovation;
3. determine whether there is a significant relationship between ICT competence and instructional delivery; and
4. identify which aspects of ICT competence significantly predict instructional delivery.

II. METHODOLOGY

Methods of Research

The study employed a descriptive-correlational research design. The descriptive component was used to determine the levels of ICT competence and instructional delivery among TLE teachers, while the correlational component was used to examine the relationship between ICT competence and instructional delivery. This design was appropriate because the variables were measured in their natural setting without manipulation and were analyzed to determine the extent and direction of their association.

Locale and Respondents of the Study

The study was conducted in public secondary schools under the Department of Education Capiz Division during School Year 2025-2026. The locale included schools from different districts of Capiz, representing both urban and rural settings. These schools offered Junior High School Technology and Livelihood Education, including the specializations of Home Economics, Industrial Arts, Information and Communication Technology, and Agriculture.

The respondents were 100 Junior High School TLE teachers selected through stratified random sampling. The sample included teachers from Bula Integrated School, Cuartero National High School, Dao National High School, Ivisan National High School, Jagnaya National High School, Jamindan National High School, Mambusao East National High School, Mambusao National High School, Mianay National High School, Sap-an National High School, Vicente Andaya National High School, and Basiao National High School. The respondents represented different ages, sex, civil status, educational attainment, school classifications, and TLE specializations.

Research Instrument

A researcher-made questionnaire was used as the main instrument for data collection. The first part gathered the demographic profile of the respondents. The second part measured ICT competence through four dimensions: technological competence, pedagogical ICT competence, content-specific ICT competence, and attitude toward ICT. The third part measured instructional delivery in terms of lesson planning, learning activities, assessment practices, and instructional innovation.

The instrument underwent face and content validation by experts to ensure clarity, relevance, and alignment with the objectives of the study. It was pilot-tested with 30 Junior High School TLE teachers from Capiz National High

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School who were excluded from the final sample. The reliability test yielded a Cronbach's alpha coefficient of 0.851, indicating excellent internal consistency and confirming the suitability of the instrument for quantitative analysis.

Data Gathering Procedure

Before data collection, the researcher secured the necessary approval from the thesis adviser, the department dean, the Schools Division Superintendent of DepEd Capiz, and the concerned school administrators. The purpose of the study was explained to the respondents, and informed consent was obtained before administering the questionnaire. Participation was voluntary, and confidentiality and anonymity were assured.

The questionnaires were administered through both face-to-face and online modes. Face-to-face administration was used in schools that were accessible to the researcher, while Google Forms were used for schools that were difficult to reach due to distance or schedule constraints. After retrieval, responses were checked for completeness, coded, encoded, and prepared for statistical treatment.

Data Analysis Procedure

The data were analyzed using descriptive and inferential statistics. Frequency and percentage were used to describe respondents' demographic profile. Weighted mean and standard deviation were used to determine the levels of ICT competence and instructional delivery. Pearson Product-Moment Correlation was used to determine the relationship between ICT competence and instructional delivery. Multiple regression analysis was used to identify which ICT competence dimensions significantly predicted instructional delivery. Statistical significance was tested at the 0.05 alpha level.

Scoring of Variables

The level of ICT competence was interpreted using a five-point Likert scale. The verbal descriptions were Very High, High, Moderate, Low, and Very Low. Instructional delivery was also interpreted using a five-point scale with the descriptions Very Good, Good, Fair, Poor, and Very Poor.

Table 1. Scale used to interpret the level of ICT competence.

Response	Score	Scale of Mean	Verbal Interpretation
Strongly Agree	5	4.21-5.00	Very High
Agree	4	3.41-4.20	High
Undecided	3	2.61-3.40	Moderate
Disagree	2	1.81-2.60	Low
Strongly Disagree	1	1.00-1.80	Very Low

Table 2. Scale used to interpret the level of instructional delivery.

Response	Score	Scale of Mean	Verbal Interpretation
Strongly Agree	5	4.21-5.00	Very Good
Agree	4	3.41-4.20	Good
Undecided	3	2.61-3.40	Fair
Disagree	2	1.81-2.60	Poor
Strongly Disagree	1	1.00-1.80	Very Poor

III.RESULTS AND DISCUSSION

ICT Competence of TLE Teachers

Table 3 presents the ICT competence of TLE teachers in terms of technological competence, pedagogical ICT competence, content-specific ICT competence, and attitude toward ICT. The general mean of 4.20 was interpreted as High, indicating that the teachers generally possessed the knowledge, skills, and disposition needed to use ICT in their teaching practice.

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Among the four dimensions, attitude toward ICT obtained the highest mean of 4.26, interpreted as Very High. This indicates that the respondents had a favorable disposition toward the use of ICT and were willing to adopt technology to support teaching and learning. Content-specific ICT competence also obtained a Very High rating with a mean of 4.21, suggesting that teachers were capable of selecting and applying ICT tools relevant to TLE subject content. Technological competence and pedagogical ICT competence were both rated High, with means of 4.17 and 4.15, respectively. These findings imply that while teachers can operate digital tools and integrate them into instruction, further support may still be needed to strengthen advanced and pedagogy-driven ICT use.

Table 3. ICT competence of TLE teachers.

ICT Competence	Mean	Verbal Description
Technological Competence	4.17	High
Pedagogical ICT Competence	4.15	High
Content-Specific ICT Competence	4.21	Very High
Attitude Toward ICT	4.26	Very High
General Mean	4.20	High

Legend: 4.21-5.00 = Very High; 3.41-4.20 = High; 2.61-3.40 = Moderate; 1.81-2.60 = Low; 1.00-1.80 = Very Low.

The results support the view that ICT competence is not limited to technical ability. Teachers must also be able to apply digital tools in ways that match lesson objectives, instructional strategies, and subject content. In TLE, where instruction often involves demonstrations, performance tasks, and skills development, content-specific and pedagogical ICT competence are especially important. The findings also suggest that positive attitude toward ICT can encourage teachers to explore new tools, although attitude alone may not be sufficient to guarantee effective ICT-integrated instruction.

Instructional Delivery of TLE Teachers

Table 4 presents the instructional delivery of TLE teachers. The general mean of 3.91 was interpreted as Good, indicating that the teachers generally delivered instruction effectively in terms of lesson planning, learning activities, assessment practices, and instructional innovation.

Lesson planning obtained the highest mean of 4.06, interpreted as Good. This suggests that teachers were able to organize objectives, content, learning tasks, and assessment methods in a coherent manner. Instructional innovation followed with a mean of 3.91, also interpreted as Good, indicating that teachers used creative and technology-supported strategies to improve instruction. Learning activities obtained a mean of 3.85, while assessment practices obtained a mean of 3.82. Both were interpreted as Good, suggesting that teachers used active learning tasks and appropriate assessment methods suited to the practical and performance-based nature of TLE.

Table 4. Instructional delivery of TLE teachers.

Instructional Delivery	Mean	Verbal Description
Lesson Planning	4.06	Good
Learning Activities	3.85	Good
Assessment Practices	3.82	Good
Instructional Innovation	3.91	Good
General Mean	3.91	Good

Legend: 4.21-5.00 = Very Good; 3.41-4.20 = Good; 2.61-3.40 = Fair; 1.81-2.60 = Poor; 1.00-1.80 = Very Poor.

The Good rating across all indicators indicates that TLE teachers were able to organize and deliver lessons that supported learner participation and skills development. However, the results also show that assessment practices and learning activities received relatively lower means than lesson planning. This suggests a need to strengthen the use of ICT-supported formative assessment, digital performance monitoring, interactive simulations, and collaborative technology-based learning tasks in TLE classes.

Relationship Between ICT Competence and Instructional Delivery

Table 5 presents the relationship between ICT competence and instructional delivery. The Pearson correlation yielded an r-value of 0.613 with a p-value of 0.000, indicating a significant moderate positive relationship between the two variables. This means that teachers with higher ICT competence tended to demonstrate better instructional delivery.

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Table 5. Relationship between ICT competence and instructional delivery.

Variables	r-value	p-value	Remarks
ICT Competence and Instructional Delivery	0.613	0.000	Significant

Legend: $p < 0.05$ is significant at the 5 percent alpha level.

The result implies that ICT competence contributes to effective instructional delivery. Teachers who are more competent in using ICT are more likely to design organized lessons, create meaningful learning activities, apply suitable assessment tools, and use innovative instructional strategies. The finding also supports the TPACK perspective, which emphasizes that effective instruction requires the meaningful integration of technology, pedagogy, and content knowledge.

Predictors of Instructional Delivery

Table 6 presents the regression analysis showing which ICT competence dimensions predicted instructional delivery. Among the four predictors, only pedagogical ICT competence significantly predicted instructional delivery (Beta = 0.735, p = 0.000). Technological competence, content-specific ICT competence, and attitude toward ICT did not significantly predict instructional delivery.

Table 6. Regression analysis of ICT competence dimensions predicting instructional delivery.

Predictor	Beta	p-value	Interpretation
Technological Competence	-0.181	0.189	Not Significant
Pedagogical ICT Competence	0.735	0.000	Significant
Content-Specific ICT Competence	0.049	0.598	Not Significant
Attitude Toward ICT	0.063	0.669	Not Significant

Model summary: R2 = 0.465.

The result indicates that teachers' ability to use ICT pedagogically is more important to instructional delivery than technical skill alone. It is not enough for teachers to know how to operate digital tools or to have a favorable attitude toward technology. What matters most is their ability to design ICT-supported lessons, manage technology-enhanced learning activities, use digital tools for assessment, and align ICT use with instructional objectives. This finding suggests that professional development should focus less on basic tool operation and more on ICT-based pedagogy, lesson design, learner engagement, assessment, and instructional innovation.

Overall Findings

Overall, the findings confirmed that ICT competence was significantly associated with instructional delivery among Junior High School TLE teachers in the DepEd Capiz Division. The teachers demonstrated a high level of ICT competence and a good level of instructional delivery. However, the regression results clarified that pedagogical ICT competence was the only significant predictor of instructional delivery. Therefore, strengthening teachers' pedagogical use of ICT is essential in improving TLE instruction, particularly in planning lessons, developing learning activities, assessing learners, and introducing instructional innovations.

Based on these findings, school heads and education leaders should provide professional development programs that emphasize the pedagogical integration of ICT in TLE. These programs may include hands-on workshops, mentoring, collaborative lesson design, digital assessment training, and communities of practice where teachers can share ICT-based instructional strategies. The Department of Education and school administrators should also ensure access to functional ICT resources, internet connectivity, and technical support so that teachers can apply their pedagogical ICT competence in actual classroom settings.

IV. CONCLUSION

According to the results of the study, the following hypotheses were created. It was found that TLE teachers show a great amount of ICT competence in the technological, pedagogical, content, and attitudinal dimensions. This implies that the teachers can include digital technology in their teaching and appear to be ICT supportive of the teaching and learning processes.

Teachers that have a TLE background are proficient at teaching and understanding the concepts of lesson planning and the implementation of learning and assessment. These teachers show innovation. Thus, the teachers' lesson

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delivery is effective and helps students in the development of their skills and understanding of Technology and Livelihood Education.

It happens that the teachers having a higher level of ICT engagement are better in their teaching practice. This shows that improving the level of competence of teaching staff with ICT helps develop effective teaching practice.

Teaching tactically ICT in the teaching strategies of the teachers has more of an impact on instruction than the teachers' attitudes towards ICT, teaching practices, ICT skills, and knowledge of ICT in teaching.

V. RECOMMENDATIONS

Based on the findings and conclusions of this study, we suggest several improvements ICT integration and Instructional Delivery concerning Technology and Livelihood Education (TLE) teachers.

School principals might want to build up their staff development initiatives by teaching pedagogy within the realm of ICT for teaching. Something like a hands-on workshop, a seminar, or a mentorship focusing on pedagogy and teaching ICT within the parameters of lesson planning, teaching, or assessing, may benefit the teachers and help them enhance their teaching.

More guidance within ICT may come from the Department of Education by proving adequate tech, a well-functioning network, and tech support for staff coupled with ICT for teaching. ICT work related to teaching may benefit teachers more so in teaching/helping them hone the pedagogical skills needed for ICT within teaching.

School administrators might want to support a culture of inter teacher collaboration through staff development networks for teaching. Collaborating networks of staff development encourages teachers to think more stylistically and hone their ability for pedagogical ICT.

Self-initiated efforts to learn, professional development, and the foresight and willingness to explore and try the position of ICT within pedagogy for teaching and learning and ICT services is encouraged for teachers.

More research should be done regarding school/work context, pedagogical ICT, Teaching and learning, and other variables or factors that impact teaching and learning or the ICT position within pedagogy. This must be completed to strengthen ICT services within pedagogy.

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