PANTAO
The International Journal of the Humanities and Social Sciences
Volume 5, Issue 1
ISSN 3028-0877 | DOI 10.69651/2022PIJHSS

Instructional and digital competence of teachers in teaching Technology and Livelihood Education in Lapu-Lapu City

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ABSTRACT

The study determined the instructional and digital competence of teachers in teaching TLE subjects in selected public schools in the Division of Lapu-Lapu City during the school year 2025-2026, as a basis for a professional development plan. A quantitative descriptive research design was employed, and data were collected through purposive sampling. Data collection used a Likert-scale questionnaire ranging from 1 to 4, consisting of 40 statements measuring teachers' instructional competence and 7 measuring digital competence. The instrument signified a Cronbach's Alpha coefficient value >.8. The findings showed the demographic profile of the respondents in terms of age; the respondents in selected schools in Lapu–Lapu City comprised the age group from 41 to 50 years old. In addition, regarding educational attainment, the majority of respondents were taking units in MAEd and had 11 years or more of teaching service, and the majority were Teacher I–III. Furthermore, the respondents' level of instructional competence among teachers was interpreted as "Very high," which includes the instructional implementation, knowledge of subject matter, classroom management, and monitoring of students' progress, and the level of digital competence of the teachers in teaching TLE subject was interpreted as "Very High". Moreover, the findings revealed that teachers' years of teaching service were statistically significantly related to their instructional and digital competence, whereas age, highest educational attainment, years of service, and civil status were not. Based on the findings, it is recommended that the Professional Development Plan be implemented across schools to improve the instructional delivery and digital competence of TLE teachers.

Keywords: Vocational education, instructional competence, digital competence, professional development plan, quantitative descriptive research design

Date Submitted: January 1, 2026
Date Accepted: January 10, 2026
Date Published: January 28, 2026

DOI: http://doi.org/10.69651/PIJHSS0501751

Recommended citation:
Aying, R. Y. (2026). Instructional and digital competence of teachers in teaching Technology and Livelihood Education in Lapu–Lapu City. Pantao (The International Journal of the Humanities and Social Sciences) 5 (1), 8314-8325. http://doi.org/10.69651/PIJHSS0501751

INTRODUCTION

Teachers, as stewards of classroom instruction, play a crucial role in fostering an enabling and supportive environment for effective teaching and learning, providing high-quality learning opportunities for students, and supporting students' learning. Through teachers' competence, the Department of Education (DepEd) can develop holistic learners who are immersed in values, equipped with 21st-century skills, and able to boost the country toward development and progress (DepEd Order No. 42, s. 2017). Hence, teachers' competence is conceptualized as the ability to effectively carry out teaching and learning tasks by applying knowledge, skills, attitudes, and values to ensure quality education for all learners (Konig, 2021).

Instructional and digital competence refers to a set of skills that enable teachers to effectively use a variety of appropriate technologies and facilitate learning in order to optimize the teaching process which can significantly improve students' academic performance (Oppune & Friday, 2020); enhance students' interactions (Orakova, 2024); and motivate students to show positive discipline (Stevens, 2018; & Panda, 2019) specifically in learning TLE subjects which is a means to enhance the quality of life, essential skills and knowledge.

However, various studies have shown that teachers generally do not have sufficient digital skills (Sun et al., 2016; & Basal, 2022), a lack of skills in managing classroom efficiency (Nahari et al., 2020), and inadequate technological competence (Redmond & Lock, 2019; Voithofer & Nelson, 2021). In addition, a study was conducted by The World Bank Group in the Philippines, through the Australian Aid in 2016, entitled "Assessing Basic Education Service Delivery in the Philippines: Highlights from Findings Regarding Teachers," which revealed that the teachers' instructional competence, and content knowledge were poor; teachers need higher critical thinking skills, and results from educator qualities, and that the professional development for public school teachers in the Philippines is inadequate (Lynard et al., 2022).

Moreover, according to Blomeke et al. (2020) and Yang et al. (2022), most of the research studies examining the relation between instructional and digital competence were restricted to a limited set of competence facets; thus, the state of research is still limited, among other aspects, due to methodological limitations. In addition, according to Ariaso & Tancinco (2016), the TLE subject is often ignored and taken for granted by many students today, without realizing its significant contribution to their lives and its never having been properly recognized. It is evident that TLE subjects are not always prioritized.

In the Division of Lapu- Lapu City, a lot of TLE teachers struggled with the integration of technology during asynchronous classes held and implemented in the Department of Education, and some of the teachers during the classroom observation acquired a "Poor" to "Satisfactory" rating in ICT integration during class sessions which signifies that there is a need to conduct this study so that professional development plan may be formulated to help the teachers. Given the aforementioned research gaps, the researcher conducted this study to determine teachers' levels of instructional and digital competence in teaching TLE subjects in selected secondary public schools in the Division of Lapu-Lapu City, as a basis for a professional development plan. The possible outcomes of this study might assist the Department of Education in preparing professional programs to improve teachers' competence in handling TLE subjects and in determining ways to improve the teaching and learning process.

Statement of the problem

This research determined the instructional and digital competence of teachers in teaching Technology and Livelihood Education subjects in selected public schools in the

Division of Lapu-Lapu City during the school year 2025-2026 as a basis for the development of a Professional Development Plan.

1. What is the demographic profile of the respondents in terms of age, highest educational attainment, years in service, civil status, and position?
2. What is the level of perceived instructional competence of the respondents in teaching Technology and Livelihood Education subjects in terms of instructional implementation, knowledge of subject matter, classroom organization and management, and monitoring of student progress and potential?
3. What is the level of perceived digital competence of the respondents in teaching Technology and Livelihood Education subjects?
4. Is there a significant relationship between the teachers' profile and their instructional competence and digital competence?
5. Based on the findings of the study, what professional development plan can be proposed?

METHODOLOGY

This study made use of quantitative-descriptive research design as the basis of the study and a purposive sampling technique in selecting the respondents of the study. The research method was utilized to focus on describing the characteristics of a phenomenon such as the instructional and digital competence of teachers (Graham, 2024). Doing this provides a better understanding of the nature of the subject at hand and creates a good foundation for further research Statistical, mathematical, or numerical analysis of questionnaires, and surveys, or by modifying existent statistical data using computer techniques, are at the heart of quantitative approaches.

The study conducted was in selected public secondary schools such as Bankal National High School, Babag national High School, Mactan National High School, Maribago National High School, Marigondon National High School, Pajo National High School and Pusok National High School in the Division of Lapu-Lapu City, Cebu. The schools were randomly selected as the research environment since each school are offering diverse learning contexts on T.L.E subjects and which offers various specialization such as various exploratory mini-courses in Grades 7 & 8 (like Cookery, Drafting, CSS, Beauty Care) covering core skills and then specialization tracks in Grades 9 & 10 (like Agri-Crop, EIM, Dressmaking, Computer Systems Servicing). In addition, each schools designated an area as a laboratory for students to learned the skills required for each quarter. school over time.

The respondents in this study were the 67 junior high school TLE teachers in selected public schools in Lapu-Lapu City, purposively selected to determine the level of their instructional and digital competence in teaching TLE subjects and those currently teaching. The respondents of this study comprised junior high school teachers teaching TLE subjects during the school year 2025-20266.

The study used a purposive sampling design and 67 secondary teachers were selected to determine the level of their instructional and digital competence in teaching TLE subjects.

The research instrument used in the study was an adapted and validated survey questionnaire developed by Flores (2019) and Turel et al. (2017), designed to determine the level of teachers' instructional and digital competence in teaching TLE subjects in selected schools in Lapu-Lapu City. The questionnaire was validated by 2 master teachers and subjected to pilot testing to assess its reliability and feasibility for the study. It consists of three (3) parts. The first part consisted of statements relating to the demographic profile of the study's respondents; part II comprised 38 items about instructional competence; and part III consisted

of eight (8) statements that expressed a particular indicator of ICT skills used in teaching TLE subjects.

The researchers secured approval through transmittal letters prepared for the Lapu-Lapu City division superintendent and the school principals of selected schools. Once approved, the researcher distributed the informed consent to the identified respondents.

The adapted and modified survey questionnaire was administered to determine the level of teachers' instructional and digital competence in teaching TLE subjects in selected schools in Lapu-Lapu City during the school year 2025-2026. To ensure the confidentiality of the collected data, respondents provided formal consent. The research subjects were assured of the confidentiality of the information gathered; thus, the respondents' responses were used only for research purposes.

Once the data were gathered and tabulated in an Excel file, the researcher used statistical software to analyze them. Based on the results, the statistical interpretation was supported by professional recognition when presenting significant results, conclusions, and interventions. The researcher ensured respondents' confidentiality was maintained throughout the study, in accordance with the informed consent. The informed consent concept was that researchers provide respondents with sufficient information about the study to inform them of the benefits of participating. Also, this assured respondents that only authorized personnel have access to all the information obtained from them.

The study utilized a descriptive statistic to analyze the survey data such as frequency, percentage, mean and standard deviation. Applying logic and reasoning to translate numerical data into useful knowledge. In the first part of the questionnaire, the researcher examined the demographic profile of the respondents, the level of instructional and digital competence of the teachers, and compute the frequency distributions, percentage distributions, mean scores, and standard deviations. In addition, a Pearson's r correlation was used to test the significance of the relationship between the teachers' profiles, instructional competence, and the respondents' digital competence.

RESULTS AND DISCUSSION

Demographic profile of the respondents

The profile of the respondents, based on the gathered data, in terms of age, highest educational attainment, teaching experience, civil status, and teaching position provides a valuable insight and essential to understand the teachers' diversity of experiences and perspectives in terms of their level of instructional and digital competence among TLE teachers in various schools in the Division of Lapu-Lapu City.

The age distribution of 67 TLE teachers, the data showed that the majority of the teachers composed of age group from 41–50 years old (21) comprises of 31.34% based from the total population, and followed by those in the age group of 31–40 years old (19) garnered a 28.36%. In addition, the results revealed that the youngest age group is 21–30 years old (11), which represents 16.41% of the respondents, while the 51–60 age bracket (12) garnered 17.91%. The lowest percentage, by age group, was teachers aged 61 and above (4), comprising only 5.97% of the population. The results pointed out that teachers are composed of a seasoned teaching group, capable of delivering quality education exhibiting a varying level of adaptability to various teaching techniques, knowledge on subject matter, and integration of new technologies in teaching TLE subjects, which could influence their confidence and effectiveness in TLE instruction.

Overall, the data highlights the importance of continuous professional development, particularly in instructional innovations and digital literacy in order to ensure that teachers

across all age groups remain competent and responsive to 21st-century teaching skills. The results conformed to the findings in the study conducted by Pome and Feri (2018) that the longer the teachers are in the teaching process, the more skilled they will be compared to those who are new in teaching.

In terms of the educational attainment of the respondents, it is clearly presented through the sample size of 67. The results showed that the majority of the teachers had a unit degree, comprising 47.76% (32), followed by 23 teachers with a Bachelor's Degree at 34.33%. In addition, 10.45% (7) of teachers hold a doctoral degree, 5.97% (4) hold a master's degree, and 1.49% (1) hold a doctoral degree. Based on the findings, the majority of teachers value the learning they acquired in postgraduate studies to enhance their instructional and digital competence, which can help students learn better and contribute to improved school performance overall. The findings were supported by Bulilan (2022), which found a significant difference in teachers' competence in teaching by educational attainment, indicating that educational attainment is a factor in their teaching competencies.

The distribution of TLE teachers according to the years of service reveals that the majority are 33 teachers (49.25%) with 11 or more years of teaching service, followed by 21 teachers (31.34%) with 6–10 years of experience. Furthermore, 9 teachers (13.43%) have been teaching for 1–5 years, and only 4 teachers (5.97%) have less than 11 months of experience. Overall, the results show that the majority of TLE teachers are highly experienced, having taught for more than 10 years, indicating high professionalism and instructional and digital competence in teaching TLE subjects. Teachers' prolonged experience enhances their ability to manage learners effectively in classroom settings, ensure safety in laboratories and TLE shops, and deliver subject-matter competencies with confidence and quality. Kini & Podolsky (2016) revealed that the teaching experience and length of service are positively associated with students' academic performance and teachers' instructional and digital competence, thus, the results revealed that teachers' years of teaching service and age improved teachers' performance and could be among the many factors that affect teaching quality.

In terms of the distribution of civil status showed that the majority of the teachers were married, comprising 73.13% (49) of the total sample, while those who were single comprised 14 teachers (20.90%). In addition, widowed teachers comprised 3 respondents (4.48%), and only 1 teacher (1.49%) was categorized as separated from marital obligation. This distribution showed that the majority of the TLE teachers are married, with fewer teachers being single, widowed, or separated. The findings suggested that married teachers in the TLE department may have meaningful implications for teaching competence, which denotes teachers' maturity and a high level of responsibility in managing students in the classroom. This finding was supported by Harbour et al. (2015), which reported that marital status influenced teachers' competence in classroom management, favoring married teachers.

The length of teaching experience among respondents is a significant factor in understanding how competent the teachers are in handling diverse learners. The distribution of the TLE teachers by teaching position showed that the majority are classified as Teacher I–III, comprising 52 teachers (77.61%), indicating that most are in entry- to middle-level teaching ranks. Meanwhile, 15 teachers (22.39%) acquired a teaching position of Master Teacher I–IV, which represents higher professional positions, while none of the respondents occupy the position of Head Teacher. The results denote that all respondents are classroom teachers. Overall, the results table suggests that teaching staff is largely composed of regular teachers, with a smaller proportion of Master Teachers among the selected respondents. It denotes a crucial role in improving competence in both instruction and digital integration in teaching TLE subjects through performance mentoring and coaching (Harbour et al., 2015). Thus, the majority of the teachers still have the opportunity to acquire pedagogical, digital competence,

and technical skills, such as using digital tools, preparing competency-based lessons, and using recorded video demonstrations common in TLE when skills are to be learn. Moreover, experienced teachers, such as master teachers, are expected to facilitate novice teachers' instructional competence, mentor novice teachers, and serve as models of effective teachers (Brandenburg et al., 2016).

Level of perceived instructional competence of the respondents in teaching TLE

Teachers' instructional implementation is the set of skills that enable them to meaningfully deliver lessons and effectively facilitate learning for their students through various teaching techniques, efficient teaching methods, classroom management, and assessment practices. Thus, the consistent application of that competent teacher plays a critical role in improving students' learning (Naz, 2016). It is essential to reassess and enhance teachers' instructional competence, particularly through instructional implementation, to ensure learners' continued success in this new educational landscape.

Based on the results the highest mean scores were observed in statements "Employs different techniques and instructional strategies, such as hands-on learning" (M = 3.63), "Emphasizes higher-order thinking skills in TLE subjects" (M = 3.60), and "Leads, supervises, and facilitates students' hands-on activities to promote mastery of competencies" (M = 3.60). Meanwhile, the lowest mean scores, which are still within the "agree" range, were observed in statements "Teaching metacognitive strategies" (M = 3.47) and "Varying strategies for diverse learners" (M = 3.49).

This implies that the teachers are highly competent in their instructional competencies in terms of its implementation that they can show a broad, accurate and up to date knowledge on a specialized subject, they were able to organize well the teaching by choosing wisely learning experience to stimulate thinking and imagination of the learners, they effectively used a variety of teaching methods and help students articulate their ideas and thinking process.

The findings of this study conformed with the study of Oppune & Friday (2020) that Instructional competence enable teachers to effectively use a varietyof appropriate teaching strategies and facilitate learning in order to optimize the teaching process which can significantly improve students' academic performance enhances students' interactions (Orakova, 2024);and increases students motivation that leads to positive discipline and improves the quality of life, essential skills and knowledge(Stevens, 2018; & Panda, 2019). This aligns with UNESCO's 2030 program, which promotes lifelong learning and directly supports Quality Education, the fourth goal of the United Nations Sustainable Development Goals (UN, 2025).

Knowledge of subject matter

The instructional competence of the teachers lies within their mastery of the content to be taught, which can be conceptualized as the ways of representing and delivering the lesson that make it understandable to students.

The results revealed that the highest mean score was shown in the statement, "Communicates effectively within the context of TLE and about its concepts, processes, and applications" (M = 3.60), which indicates that TLE teachers are excellent in explaining TLE concepts clearly to students and using appropriate technical language that helps enhance instructional competence. In addition, statements that integrated topics with previously learned concepts received a mean score of 3.57, and those that related the subject matter to other pertinent topics received a mean score of 3.54. These results suggested that teachers are effective at relating lessons to real experiences, improving learning continuity, and helping

students understand how TLE concepts work, enabling them to apply them to real-life situations.

The results implied that teachers were competent in instructional delivery through mastery of the subject content, allowing them to deliver more advanced and varied learning activities, deepen students' technical understanding, and ensure that learners develop both foundational and higher-order skills needed for livelihoods, technology use, and future vocational opportunities. The findings were similar to the study of Abiola et al. (2023) stated that teachers should know teaching strategies that incorporate appropriate conceptual representations to address learner difficulties and misconceptions and to foster meaningful understanding through teachers' mastery of the knowledge of the subject matter, thus, teachers' capacity to acquire new knowledge and abilities, which can be strengthened through targeted learning and human resource development initiatives such as seminars and training programs can be helpful in the educational system.

Classroom organization and management

Teachers' instructional competence can be demonstrated through effective management and classroom organization, which play a vital role in creating a safe, child-friendly learning environment. Thus, a well-organized classroom and effective management of classroom activities will not only enhance students' learning experiences but also positively impact classroom dynamics.

The highest mean score interpreted as "Very high" is based on the statement "Is aware of all the activities in the classroom" (M = 3.65), "Interprets and responds to inappropriate behavior promptly" (M = 3.57), and "Implements rules of behavior fairly and consistently" (M = 3.57). The results revealed that teachers are knowledgeable in managing student behavior and maintaining fairness, thereby contributing to a positive learning environment. It also indicates that TLE teachers are knowledgeable about effectively monitoring students during hands-on activities, ensuring safety, and maintaining order. Moderately high scores are observed for using disciplinary measures appropriately (M = 3.50), using space and proximity to manage attention or spot trouble (M = 3.49), and organizing classroom space efficiently (M = 3.49), all interpreted as "Very high". Overall, the results showed a "Very high" level of digital competence with an average mean score of 3.51 and a standard deviation of 0.51.

The results reflected teachers' competence in structuring the physical environment and in moving around the classroom to facilitate supervision—both vital in TLE classes that involve tools, equipment, and technical tasks. It as highlighted that TLE teachers are skilled at maintaining order and responding to issues as they arise, but would benefit from additional training to further improve foresight, organization, and multitasking—competencies vital for handling diverse student activities in a dynamic, skill-based classroom environment. The results conformed to this study's findings, which, according to Rasdiana et al. (2024), indicate that teachers' competence in classroom organization and management directly influences instructional competency.

Monitoring student progress and potential

Regularly monitoring students' academic progress also enables the teacher to analyze a student's current performance and evaluate growth throughout the school year. Furthermore, monitoring student progress also gives teachers the opportunity to reflect on the teaching strategies they employ in lesson delivery and to assess the impact of the instructional strategies they use in class that promote instructional competence.

The highest mean scores were observed for statements that clearly explained homework (3.65) and monitoring student progress (3.63), indicating that teachers were consistent in providing clarity and tracking performance. However, the lowest-rated areas were analyzing students' beliefs and attitudes toward TLE (3.35) and re-teaching non-mastery learners (3.38). The results revealed that teachers need further support in diagnosing misconceptions and addressing diverse learner needs through intervention strategies. Overall, results showed strong monitoring skills, personalized instructional support from the school administration, and mentoring and coaching from master teachers and head teachers in the TLE department. The results implied that teachers' competence in monitoring students' progress and potential can impact students' lives and school performance. Enhancing these areas will help teachers provide targeted interventions for struggling learners, and improving teachers' remedial and feedback practices will ensure that students who struggle receive timely support, thereby improving their mastery of TLE competencies and boosting their confidence and performance. According to Kini & Podolsky (2016), monitoring students' progress is a manifestation of effective and high-level instructional competence. The teacher effectiveness associated with experience is most steep in teachers' initial years, but continues to be significant as teachers reach the second, and often third, decades of their careers.

Level of perceived digital competence of the respondents in teaching TLE

The highest mean scores showed in the statement "I use technology in my demonstrations of TLE skills to help me explain main concepts" (M = 3.69) and "I use multimedia or technology (PowerPoint presentations and videos) to express concepts of the subject" (M = 3.68), which was interpreted as a "Very high" level of digital competence. These results suggest that TLE teachers are most competent in integrating technology to enhance demonstrations and clarify technical concepts—an essential skill in practical, skill-based learning.

The lowest scores were indicated in "I use game-based activities in my discussion" (M = 3.29) and "I use appropriate online platforms such as Microsoft Teams, Google Classroom, Google Meet, etc., during MDL" (M = 3.37). While still within the "agree" range, these suggest areas where teachers could further strengthen their digital competence, particularly in integrating interactive and online tools for remote or blended learning scenarios. The item "I use a variety of technological teaching approaches to transform subject matter into comprehensible knowledge" (M = 3.41) also indicates moderate proficiency, pointing to potential growth in diversifying instructional strategies with technology. Overall, the results show a "Very high" level of digital competence with an average mean score of 3.52 and a standard deviation of 0.54.

The findings revealed that teachers' very high level of digital competence in enhancing TLE instruction may be influenced by the facilities and resources available in schools and by the seminars and training programs implemented to improve teachers' digital competence. In addition, it implied that strengthening digital skills, especially in using online platforms, game-based learning, and diverse technological approaches, can further improve instructional competence. In addition, it implied that knowledge and mastery of these digital tools in teaching enable teachers to design more interactive and adaptive lessons, manage remote or blended learning effectively, and provide timely feedback on students' performance. The findings conformed to what Basilotta-Gomez (2022) stated, that teachers' digital competence helps educate students and leads to teachers' professional growth. Thus, by applying digital integration skills in classroom settings, teachers can ensure that their instructional strategies and digital skills translate into meaningful, performance-oriented learning experiences that equip students with practical, 21st-century skills (Salvador et al., 2020).

Test of significance of profile on instructional competence

To determine whether the relationship between the respondents' demographic profile and instructional and digital competence, statistical significance tests were conducted.

The results in Table 12 showed that among the different TLE teachers' profile variables, only years of service shows a statistically significant relationship with their instructional and digital competence, as indicated by its p-value of 0.025, which is below the 0.05 significance level. This means that teachers' competence levels vary notably by how long they have been in the teaching profession, suggesting that more experienced teachers may demonstrate greater competence or that competence develops progressively over years of practice. On the other hand, Age ($p = 0.512$), Highest Educational Attainment ($p = 0.443$), Civil Status ($p = 0.380$), and Teaching Position ($p = 0.329$) were not significant, indicating that these demographic profiles do not meaningfully influence teachers' instructional or digital competence.

The findings revealed that competence in TLE is not determined by age, civil status, or educational attainment, but rather by actual teaching experience and exposure to the teaching and learning process. Further, the results implied that teachers' years of service can help teachers exhibit excellent instructional competence and teaching effectiveness, which will be beneficial to their teaching profession and well-being. The studies by Gaitas et al. (2024) and Aquino (2024) show that the number of teaching experiences of teachers plays a critical role in fostering meaningful learning, even in inclusive classrooms, through the effective use of instructional and peer support strategies that lead to students' success.

Test of significance of profile on digital competence

The results show that among the different TLE teachers' profile variables, only Years of Service shows a statistically significant relationship with their digital competence (p-value = 0.018), and age shows a significant relationship with their digital competence (p-value = 0.002), which is below the 0.05 significance level. This means that teachers' competence levels vary notably by how long they have been in the teaching profession, implying that more experienced teachers and age may demonstrate stronger digital competence that develops progressively through years of practice. On the other hand, Highest Educational Attainment ($p = 0.232$), Civil Status ($p = 0.490$), and Teaching Position ($p = 0.319$) were not significant, indicating that these demographic profiles do not meaningfully influence teachers' digital competence.

The results implied that the relationships among age, years of service, and digital competence are important for students' learning. Teachers who effectively blend experience with digital skills are more likely to design engaging, learner-centered, and technology-enhanced lessons. This positively impacts students' motivation, critical thinking, and academic performance, thereby reinforcing the role of digital competence as a bridge between teachers' professional growth and improved student learning outcomes. In addition, these imply that the schools should strengthen experience-based professional development, mentoring, and continuous practice to boost digital competence. The study by Rasdiana et al. (2024) found that teachers' experiences directly influence digital competency. In addition, Pranoto et al. (2021) noted that veteran teachers excel in instruction, classroom management, and addressing social issues due to their practical problem-solving skills. These teachers also serve as guiding figures in addressing social problems through caring, compassionate approaches, supporting their students with complex social issues.

CONCLUSION

Based on the findings, the study concludes that TLE teachers' instructional and digital competence is significantly related to age and years of teaching service. It can also be concluded that very high instructional and digital competence, particularly in instructional implementation, subject-matter knowledge, classroom management, and monitoring student progress, can greatly contribute to teachers' professional and skill development in teaching TLE subjects. These findings highlight the need for a professional development plan focused on continuous upskilling, mentorship, and experience-based learning to sustain and enhance teachers' competencies in delivering effective and digitally integrated TLE instruction, which is in relation to the TPACK Model, and Computer-based Instruction Theory, which states that the teachers' competence is essential for students' success and teachers' professional growth.

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