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Professional Competency of Industrial Technical Education (ITE) Lecturers and Instructors in the Digital Age: An Examination of Instructional Delivery in Southwest Nigeria

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Abstract

This study investigated the influence of digital pedagogical competency on instructional delivery among Industrial Technical Education (ITE) lecturers and instructors in Southwest Nigeria. Motivated by limited empirical evidence on how educators' digital pedagogical competency affects instructional delivery within ITE programmes, despite increasing demands for technology-integrated teaching in Technical and Vocational Education and Training (TVET), the study was anchored in the Technological Pedagogical and Content Knowledge (TPACK) theory, which emphasises the integration of technology, pedagogy, and content knowledge for effective instructional practice. A descriptive survey design was adopted. The population comprised Industrial Technical Education lecturers and workshop instructors from selected tertiary institutions in Southwest Nigeria. A sample of sixty-six (66) respondents, consisting of forty-two (42) lecturers and twenty-four (24) instructors, was selected using multistage sampling procedures from six tertiary institutions offering accredited ITE programmes. Data were collected using a structured instrument titled "Digital Pedagogical Competency and Instructional Delivery Questionnaire (DPCIDQ)." Experts validated the instrument, and the Cronbach's alpha reliability coefficient was 0.84. Means and standard deviations were used to answer the research questions, while an independent samples t-test was used to test the hypotheses at a 0.05 level of significance. The findings revealed that lecturers and instructors possessed relatively high levels of digital pedagogical competency in integrating digital technologies and learner-centred instructional strategies. The study further showed that digital pedagogical competency positively influenced instructional delivery through improved student engagement, instructional effectiveness, and practical learning experiences. No statistically significant difference existed between lecturers and instructors regarding their competency levels and influence on instructional delivery. However, weaker competency areas were identified in advanced digital instructional material development, practical ICT application, and alignment with emerging industry technologies. The study concluded that digital pedagogical competency is critical to effective instructional delivery in Industrial Technical Education. The study recommended sustained professional development, improved digital infrastructure, strengthened industry collaboration, and continuous institutional support for technology-integrated instructional practices.

Keywords: Digital pedagogical competency, instructional delivery, Industrial Technical Education, TVET, TPACK theory, digital literacy.

Introduction

The rapid advancement of digital technologies has transformed economies, industries, and educational systems worldwide. In the 21st century, often associated with the Fourth Industrial Revolution, education systems are increasingly expected to produce graduates equipped with the digital, technical, and problem-solving skills required in contemporary workplaces (Ajani et al., 2024). This transformation has significantly influenced teaching and learning, particularly within Technical and Vocational Education and Training (TVET), where practical competence and industry relevance are central objectives. Consequently, the professional competency of lecturers and instructors, especially their digital pedagogical competency, has become increasingly important for effective instructional delivery.

Globally, educational institutions are integrating digital technologies into instructional practices through virtual learning environments, simulation tools, online assessment platforms, and multimedia

instructional resources (Dochia, 2025). The shift from traditional teacher-centred approaches to learner-centred and technology-supported instruction requires educators to possess competencies that combine technological knowledge with effective pedagogical practices. According to Singh (2025), teachers in the digital age must demonstrate the ability to integrate digital tools with suitable teaching strategies to improve student engagement and learning outcomes. This competency, commonly described as digital pedagogical competency, involves the effective use of technology to plan, implement, and evaluate instructional activities.

Within TVET systems, digital pedagogical competency is particularly essential because of the practical and skill-oriented nature of technical education. Industrial Technical Education (ITE), a specialised component of TVET, focuses on preparing learners with industry-relevant practical skills needed in technical occupations such as construction, manufacturing, electrical works, and woodwork (Deckker & Sumanasekara, 2025). The increasing digitalisation of industries has introduced new instructional demands requiring lecturers and instructors to integrate digital technologies into workshop practices, practical demonstrations, and simulations. International frameworks such as the UNESCO ICT Competency Framework for Teachers and the Technological Pedagogical and Content Knowledge (TPACK) framework further emphasise the importance of integrating technology, pedagogy, and content knowledge for effective instructional delivery (Ahmed, 2025; Blose, 2025).

In Africa, the integration of digital technologies into TVET institutions has received growing attention due to the demand for digitally skilled manpower and the need to align education with labour market requirements. However, many TVET educators across sub-Saharan Africa continue to experience challenges related to inadequate digital skills, limited access to technological resources, insufficient professional training, and weak institutional support systems (Mwansa et al., 2025). These challenges are compounded by infrastructural limitations such as unstable electricity supply, poor internet connectivity, and inadequate workshop technologies, which constrain the effective utilisation of digital instructional tools.

In Nigeria, efforts to integrate digital technologies into education have increased through various ICT and educational reform initiatives aimed at improving instructional quality and workforce development. Technologies such as online learning platforms, virtual simulations, artificial intelligence, and cloud-based instructional systems provide opportunities for enhancing instructional delivery within TVET institutions (Wakil et al., 2024). Nevertheless, studies indicate that many Nigerian educators, particularly within technical and vocational institutions, still face difficulties in effectively integrating digital technologies into teaching practices due to inadequate professional training, low digital literacy, poor institutional support, and limited access to instructional technologies (Ismail et al., 2025).

Southwest Nigeria, comprising Lagos, Ogun, Oyo, Osun, Ondo, and Ekiti States, is widely recognised as one of the educationally and technologically advanced regions in the country because it has concentrated universities, polytechnics, technical colleges, and industrial establishments (National Universities Commission, 2024). Despite increasing adoption of digital technologies within educational institutions in the region, disparities still exist in the competency levels of lecturers and instructors regarding the

pedagogical use of digital tools in instructional delivery (Zou et al., 2025). Although some institutions possess relatively improved ICT infrastructure, many educators still struggle to integrate technology effectively into practical and technical instruction. Since instructional delivery in Industrial Technical Education involves practical demonstrations, workshop simulations, multimedia learning, and industry-aligned teaching strategies, effective implementation largely depends on lecturers' digital pedagogical competency (Demissie et al., 2022).

Despite the recognised importance of digital pedagogical competency, there remains limited empirical evidence on how this competency specifically influences instructional delivery among Industrial Technical Education lecturers and instructors in Southwest Nigeria. Existing studies have focused largely on general ICT integration and teacher competency without adequately examining the relationship between digital pedagogical competency and instructional effectiveness within technical education settings. It is against this background that this study investigates the influence of digital pedagogical competency on instructional delivery among Industrial Technical Education lecturers and instructors in Southwest Nigeria, to provide empirical evidence that can support policy formulation, professional development initiatives, and institutional reforms for improving the quality and relevance of technical education in Nigeria.

Literature Review

Concept of Digital Pedagogical Competency

Digital pedagogical competency refers to educators' ability to effectively integrate digital technologies into teaching and learning using appropriate instructional strategies to improve learning outcomes. It involves not only technical skills but also the knowledge, attitudes, and professional practices needed to apply technology meaningfully in education (Ahmed & Opoku, 2022). The Technological Pedagogical and Content Knowledge (TPACK) framework emphasises that educators must understand the relationship between technology, pedagogy, and subject content to create effective learning experiences (Jibril & Adedokun-Shittu, 2024). In Technical and Vocational Education and Training (TVET), particularly Industrial Technical Education (ITE), digital pedagogical competency is essential because teaching is practical and industry-oriented. Educators are expected to use digital tools such as simulation software, virtual laboratories, multimedia resources, online collaboration platforms, and computer-aided design applications to support practical learning and prepare students for modern industrial workplaces (Rahim & Ali, 2025).

The growing digitalisation of industries through automation, robotics, artificial intelligence, and cloud technologies has further increased the need for educators to integrate emerging technologies into instruction (Ibrahim, 2024). Studies show that digitally competent educators are better able to create learner-centred environments, encourage collaboration, improve communication, and support independent learning among students (Huang et al., 2024). However, the development of digital pedagogical competency is influenced by several factors, including access to technological infrastructure, institutional support, professional development opportunities, technological exposure, and educators' attitudes toward technology adoption (Althubyani, 2024). In many developing countries, including Nigeria, these challenges continue to hinder effective technology integration and the quality of instructional delivery in education.

Instructional Delivery in Industrial Technical Education

Instructional delivery refers to the methods, strategies, and processes used by educators to facilitate learning and achieve educational objectives effectively. In Industrial Technical Education (ITE), it focuses on the development of practical, technical, and vocational skills needed for industrial productivity and workforce development (Esmail & Khan, 2024). Traditionally, instructional delivery in ITE relied on face-to-face demonstrations, workshop practices, practical exercises, and apprenticeship-based learning approaches. However, the emergence of digital technologies has transformed teaching practices through blended learning, virtual simulations, online assessments, multimedia demonstrations, and collaborative digital platforms (Joshi et al., 2023). These innovations have expanded opportunities for practical learning while improving flexibility and accessibility within technical education programmes.

Effective instructional delivery in the digital age requires educators to possess adequate digital pedagogical competency. Lecturers and instructors must be able to select suitable digital tools, design technology-enhanced learning activities, manage virtual learning environments, and assess students using digital platforms (Hamzat, 2024). Research shows that high-quality instructional delivery improves students' engagement, practical skill acquisition, academic achievement, and employability outcomes (Ghanbaripour et al., 2024). Educators who effectively integrate digital technologies are more likely to promote active learning, creativity, problem-solving, and collaboration among students. Nevertheless, many TVET institutions in developing countries still face challenges such as inadequate technological infrastructure, insufficient training, poor instructional facilities, and limited access to digital resources, which continue to hinder effective instructional delivery in Industrial Technical Education programmes (Dumbiri & Nwadiani, 2020).

Digital Pedagogical Competency and Instructional Delivery

The relationship between digital pedagogical competency and instructional delivery has gained increasing attention because of the growing integration of technology into education. Digital pedagogical competency influences how educators design learning activities, engage students, assess performance, and manage teaching in technology-supported environments. Studies have shown that educators with strong digital pedagogical skills are more effective in implementing innovative instructional strategies and improving learning outcomes. Gameil and Al-Abdullatif (2023) reported that professional development programmes aimed at improving teachers' digital instructional skills enhance classroom practices and learner engagement, while Sudibya and Prasojo (2025) found that the successful use of digital instructional technologies depends largely on educators' competency and willingness to adopt technology-enhanced teaching methods. In TVET and Industrial Technical Education (ITE), this competency is particularly important because instructional delivery involves practical demonstrations, technical simulations, and hands-on skill development. Lecturers with adequate digital competency are better able to expose students to modern industrial technologies and workplace practices through tools such as virtual laboratories, simulation software, and computer-aided instructional systems (Alenezi, 2023).

Despite its importance, several challenges continue to hinder the effective integration of digital pedagogical competency into instructional delivery. These challenges include inadequate ICT infrastructure, insufficient professional training, poor institutional support, limited access to digital tools, and resistance to technological change (Singun, 2025). In Nigeria, such barriers continue to affect the implementation of digital instructional practices in technical and vocational institutions. Furthermore, existing studies have largely focused on general ICT integration rather than specifically examining how lecturers' digital pedagogical competency influences instructional delivery in Industrial Technical Education, particularly in Southwest Nigeria. This gap highlights the need for further empirical investigation into how competency levels affect teaching effectiveness, student engagement, and practical skill acquisition in technical education programmes.

Theoretical Framework

This study is anchored on the Technological Pedagogical and Content Knowledge (TPACK) theory developed by Mishra and Koehler (2006). The TPACK framework evolved from Shulman's Pedagogical Content Knowledge (PCK) and explains the knowledge base required for effective teaching in the digital age. It identifies three core knowledge domains: Content Knowledge (CK), Pedagogical Knowledge (PK), and Technological Knowledge (TK). CK refers to subject-matter expertise, PK involves teaching methods, instructional strategies, classroom management, and assessment, while TK refers to the ability to use digital technologies effectively in teaching and learning processes.

The interaction of these three knowledge domains produces integrated forms of knowledge, including Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), and the overarching Technological Pedagogical and Content Knowledge (TPACK). TPACK represents the comprehensive integration of technology, pedagogy, and content required for effective instructional delivery. The framework emphasises that effective teaching in technology-enhanced environments depends not only on isolated knowledge areas but on their meaningful integration to improve learning outcomes.

The relevance of the TPACK theory to this study lies in its explanation of how digital pedagogical competency influences instructional delivery in Industrial Technical Education. ITE lecturers and instructors are expected to integrate technical subject knowledge with appropriate pedagogical strategies and digital tools to deliver effective practical instruction. The theory also highlights that technological skills alone are insufficient; educators must understand how to apply technology pedagogically within specific subject contexts. This makes TPACK a suitable framework for examining how digital pedagogical competency affects instructional delivery in Southwest Nigeria, while also emphasising the need for continuous professional development to keep pace with evolving digital and industrial demands.

Statement of the Problem

The increasing digitalisation of industries and educational systems has transformed expectations for instructional delivery in Industrial Technical Education (ITE). In the digital age, lecturers and instructors are expected to possess digital pedagogical competency that enables them to integrate digital technologies, learner-centred teaching approaches, and industry-relevant practices

into instructional activities. Such competency is essential for preparing students with the practical and technological skills required for modern workplaces and the evolving demands of the Fourth Industrial Revolution.

Despite these expectations, evidence from many ITE institutions in Southwest Nigeria suggests that the integration of digital technologies into instructional delivery remains limited. Instructional practices in several institutions are still dominated by conventional teaching approaches, with inadequate utilisation of digital instructional tools, virtual simulations, and technology-supported learning strategies. This situation has been associated with challenges such as inadequate digital pedagogical training, insufficient ICT infrastructure, unstable power supply, and limited institutional support for technology integration in teaching and learning processes.

Although previous studies have examined ICT integration and teacher competency in general education contexts, there is limited empirical evidence specifically addressing how the digital pedagogical competency of ITE lecturers and instructors influences instructional delivery in Southwest Nigeria. Consequently, the problem of this study is the insufficient empirical understanding of the extent to which digital pedagogical competency affects instructional delivery among ITE educators in the region. Addressing this problem is important because ineffective instructional delivery may limit students' acquisition of relevant technical and digital skills needed for contemporary industrial workplaces. Therefore, this study seeks to investigate the influence of digital pedagogical competency on instructional delivery among Industrial Technical Education lecturers and instructors in Southwest Nigeria.

Purpose of the Study

The general purpose of this study is to examine the professional competency of Industrial Technical Education (ITE) lecturers and instructors in the digital age and its influence on instructional delivery in Southwest Nigeria. Specifically, the study sought to:

1. determine the level of digital and pedagogical competency possessed by ITE lecturers and instructors in Southwest Nigeria.
2. examine the influence of professional competency on the effectiveness of instructional delivery among ITE lecturers and instructors in Southwest Nigeria.

Research Questions

1. What is the level of digital and pedagogical competency possessed by ITE lecturers and instructors in Southwest Nigeria?
2. How does professional competency influence instructional delivery among ITE lecturers and instructors in Southwest Nigeria?

Hypotheses

1. There is no significant difference in the level of digital and pedagogical competency possessed by ITE lecturers and instructors in Southwest Nigeria.
2. Professional competency has no significant influence on instructional delivery among ITE lecturers and instructors in Southwest Nigeria.

Methodology

This study adopted a descriptive survey research design to investigate the influence of digital pedagogical competency on instructional delivery among Industrial Technical Education (ITE) lecturers and instructors in Southwest Nigeria. The study was conducted in five selected states in Southwest Nigeria, namely Lagos, Ogun, Oyo, Ondo, and Ekiti States, due to their high

concentration of tertiary institutions offering Technical and Vocational Education and Training (TVET) and Industrial Technical Education programmes, as well as their relative level of technological and educational development. The target population comprised one hundred and twenty-four (124) Industrial Technical Education lecturers and workshop instructors actively teaching technical and vocational courses in selected tertiary institutions during the 2025/2026 academic session. Six institutions offering accredited ITE programmes were purposively selected based on the availability of functional workshops, qualified personnel, and active engagement in technical education programmes. The selected institutions were University of Lagos, Lagos State University of Education, University of Ibadan, Federal University of Technology Akure, Ekiti State University, and Tai Solarin University of Education.

A multistage sampling procedure was employed for the selection of respondents. Purposive sampling technique was first used to select the institutions, after which stratified sampling was used to group respondents into lecturers and workshop instructors. Simple random sampling through balloting without replacement was thereafter employed to select respondents from each institution in order to eliminate bias and ensure equal participation opportunities. A total of sixty-six (66) respondents, comprising forty-two (42) lecturers and twenty-four (24) workshop instructors participated in the study, with seven lecturers and four instructors selected from each institution. Sixty-six copies of the questionnaire were administered, out of which sixty-five (65) copies were properly completed and retrieved, representing a 98.5% retrieval rate. Data were collected using a structured instrument titled "Digital Pedagogical Competency and Instructional Delivery Questionnaire (DPCIDQ)," which consisted of sixteen items organised into two clusters based on the study variables. The questionnaire was structured on a five-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1). Face and content validity of the instrument were established by three experts in Industrial Technical Education, Educational Technology, and Measurement and Evaluation from University of Lagos and the Lagos State University of Education.

A pilot test was conducted using fifteen lecturers and instructors from a tertiary institution outside the study area but with similar characteristics to the study population. Data obtained from the pilot study were analysed using the Cronbach Alpha reliability method, which yielded a reliability coefficient of 0.84, indicating high internal consistency of the instrument. The researcher, with the assistance of two trained research aides, directly administered and retrieved the questionnaires immediately after completion to ensure accuracy and minimise loss of instruments. Data collected were analysed using descriptive and inferential statistics. Mean and standard deviation were used to answer the research questions, while an independent sample t-test was used to test the null hypotheses at a 0.05 level of significance. A criterion mean score of 3.50 was adopted as the benchmark for decision-making. Ethical considerations such as informed consent, voluntary participation, confidentiality, and respondent anonymity were strictly observed throughout the study.

Results

Research Question 1:

What is the level of digital and pedagogical competency possessed by ITE lecturers and instructors in Southwest Nigeria?

Table 1: Mean Ratings of Digital and Pedagogical Competency of ITE Lecturers and Instructors in Southwest Nigeria (Including Grand Mean)

S/N	Item Statements	Lecturers Mean ($\bar{x}_1$)	Lecturers SD	Instructors Mean ($\bar{x}_2$)	Instructors SD	Remarks
1	I effectively integrate digital tools (e.g., multimedia, simulations) into my teaching.	3.88	0.58	3.74	0.55	Accepted
2	I possess adequate skills in using Learning Management Systems (LMS) for instructional delivery.	3.95	0.52	3.90	0.59	Accepted
3	I design learner-centred instructional activities using digital technologies.	3.76	0.66	3.67	0.63	Accepted
4	I am proficient in creating digital instructional materials for teaching technical subjects.	3.70	0.67	3.68	0.71	Accepted
5	I apply modern pedagogical strategies such as blended and flipped learning.	3.91	0.58	3.88	0.64	Accepted
6	I utilise digital communication tools to interact effectively with students.	4.03	0.52	4.00	0.57	Accepted
7	I regularly update my knowledge of emerging digital technologies.	4.15	0.64	3.99	0.59	Accepted
8	I demonstrate confidence in using ICT tools during instructional delivery.	3.98	0.55	3.85	0.63	Accepted
	Grand Mean / Overall Mean	**3.92**	**0.59**	**3.84**	**0.61**	**Accepted**

The results in Table 1 indicate that both lecturers and instructors demonstrate a high level of digital and pedagogical competency across all measured items, as evidenced by mean scores well above the criterion benchmark (typically 2.50 or 3.00, depending on scale). The grand mean for lecturers ($\bar{x} = 3.92$) is slightly higher than that of instructors ($\bar{x} = 3.84$), suggesting that lecturers possess marginally stronger competencies overall. Notably, both groups reported strong abilities in utilising digital communication tools ($\bar{x}_1 = 4.03$; $\bar{x}_2 = 4.00$) and maintaining up-to-date knowledge of emerging technologies ($\bar{x}_1 = 4.15$; $\bar{x}_2 = 3.99$), indicating a shared commitment to continuous professional development and effective student engagement.

However, relatively lower (though still acceptable) mean scores were observed in areas such as designing learner-centred digital activities and creating digital instructional materials, suggesting potential areas for further capacity building. The consistently low standard deviations across items for both groups suggest homogeneous responses, indicating that these competencies are widely shared among respondents.

Table 2: Independent Samples t-test Comparing Lecturers and Instructors on Digital Pedagogical Competency

Variable	Group	N	Mean ($\bar{x}$)	SD	T	df	p-value	Decision
Digital Pedagogical Competency	Lecturers	42	3.92	0.59	0.52	64	0.61	Fail to reject the null hypothesis
	Instructors	24	3.84	0.61				

The independent samples t-test in Table 2 showed no statistically significant difference between lecturers and instructors in their digital pedagogical competency in Industrial Technical Education institutions in Southwest Nigeria, $t(64) = 0.52$, $p = 0.61$. Since the p-value exceeded the 0.05 significance level, the null hypothesis was retained. Although lecturers had a slightly higher mean score ($\bar{x} = 3.92$) than instructors ($\bar{x} = 3.84$), the difference was minimal and insignificant, indicating that both groups possess relatively similar levels of digital pedagogical competency. This similarity may be linked to shared institutional expectations, comparable professional development opportunities, and similar exposure to digital instructional practices.

Research Question 2:

How does professional competency influence instructional delivery among ITE lecturers and instructors in Southwest Nigeria?

Table 3: Mean Ratings on the Influence of Professional Competency on Instructional Delivery among ITE Lecturers and Instructors in Southwest Nigeria

S/N	Item Statements	Lecturers Mean ($\bar{x}_1$)	Lecturers SD	Instructors Mean ($\bar{x}_2$)	Instructors SD	Remarks
9	My professional competency enhances students' understanding of technical concepts.	3.82	0.65	3.78	0.70	Accepted
10	The use of digital tools improves the effectiveness of my instructional delivery.	3.98	0.51	3.85	0.62	Accepted
11	My competency in ICT enables me to deliver practical-oriented lessons effectively.	3.65	0.69	3.52	0.65	Accepted
12	I engage students actively through interactive and technology-based strategies.	3.78	0.60	3.67	0.67	Accepted
13	My instructional delivery aligns with current industry practices.	3.62	0.55	3.59	0.53	Accepted
14	I assess students effectively using both digital and traditional methods.	3.68	0.58	3.55	0.62	Accepted
15	My competency improves students' motivation and participation.	3.72	0.61	3.60	0.66	Accepted
16	I adapt my teaching methods using digital tools based on students' needs.	3.85	0.64	3.78	0.72	Accepted

S/N	Item Statements	Lecturers Mean ($\bar{x}_1$)	Lecturers SD	Instructors Mean ($\bar{x}_2$)	Instructors SD	Remarks
	Grand Mean / Overall Mean	**3.76**	**0.60**	**3.67**	**0.65**	**Accepted**

The results in Table 3 reveal that professional competency has a strong positive influence on instructional delivery among ITE lecturers and instructors in Southwest Nigeria. The grand mean scores for lecturers ($\bar{x}$ = 3.76) and instructors ($\bar{x}$ = 3.67) indicate a high level of agreement across all items, suggesting that respondents perceive their competencies as instrumental in enhancing teaching effectiveness. In particular, the use of digital tools to improve instructional delivery recorded the highest mean scores ($\bar{x}_1$ = 3.98; $\bar{x}_2$ = 3.85), highlighting the central role of technology in modern teaching practices. Additionally, competencies related to student engagement, adaptability of teaching methods, and enhancement of students' understanding further underscore the importance of integrating pedagogical and digital skills in ITE.

However, comparatively lower mean scores were observed in areas such as alignment with current industry practices and the delivery of practical-oriented lessons using ICT, suggesting potential gaps between instructional practices and evolving industry demands. Despite these variations, the uniformly accepted responses and relatively low standard deviations indicate consistency in perceptions among respondents. Overall, the findings affirm that professional competency significantly contributes to improved instructional delivery, particularly in fostering student engagement, motivation, and understanding in technical education contexts.

Table 4: Independent Samples t-test Comparing Lecturers and Instructors on the Influence of Professional Competency on Instructional Delivery

Variable	Group	N	Mean ($\bar{x}$)	SD	T	df	p-value	Decision
Influence of Professional Competence on Instructional Delivery	Lecturers	42	3.76	0.60	0.57	64	0.57	Fail to reject the null hypothesis
	Instructors	24	3.67	0.65				

The independent samples t-test in Table 4 revealed no statistically significant difference between lecturers and instructors regarding the influence of professional competency on instructional delivery in Industrial Technical Education institutions in Southwest Nigeria, $t(64) = 0.57$, $p = 0.57$. Since the p-value was greater than the 0.05 level of significance, the null hypothesis was retained. Although lecturers recorded a slightly higher mean score ($\bar{x}$ = 3.76) than instructors ($\bar{x}$ = 3.67), the difference was minimal and statistically insignificant, indicating that both groups share similar perceptions of how professional competency affects instructional delivery. This similarity may result from comparable training experiences, institutional standards, and exposure to digital instructional practices.

Discussion of Findings

The findings of this study revealed that ITE lecturers and instructors in Southwest Nigeria possess a high level of digital and pedagogical competency. This is evident from the high mean ratings across all items in Table 1, indicating that respondents are proficient in integrating digital

tools, applying modern pedagogical strategies, and utilising ICT for instructional delivery. This result aligns with the assertions of Ajani et al. (2024) and Singh (2025), who emphasised that educators in the digital age must possess strong technological and pedagogical competencies to meet evolving educational demands. The high competency levels observed also support the TPACK framework highlighted by Blose (2025), which underscores the integration of technology, pedagogy, and content knowledge as essential for effective teaching. Furthermore, the finding corroborates Ahmed (2025), who stressed the importance of digital competence as a core requirement for educators in preparing learners for the global digital economy.

Despite the generally high competency levels, relatively lower ratings in areas such as digital content creation and learner-centred instructional design suggest gaps that require attention. This supports the findings of Nagy and Dringó-Horváth (2024), who identified insufficient ICT pedagogical skills as a persistent challenge among educators. Similarly, Mwansa et al. (2025) noted that infrastructural limitations and limited access to digital tools can hinder the effective application of competencies, even where basic skills exist. The absence of a significant difference between lecturers and instructors further indicates a uniform distribution of competencies across both groups, suggesting similar exposure to training and institutional expectations.

The study also found that professional competency significantly influences instructional delivery among ITE lecturers and instructors. The high mean scores in Table 3 demonstrate that competencies in ICT, digital tools usage, and pedagogical strategies contribute positively to enhancing students' understanding, engagement, and motivation. This finding is consistent with Demissie et al. (2022), who reported that effective instructional delivery is strongly dependent on teachers' competency in integrating technology into teaching. It also supports Dochia (2025), who highlighted the shift towards learner-centred, technology-driven instructional approaches in modern education systems.

However, the relatively lower ratings in aligning instructional delivery with current industry practices indicate a disconnect between teaching and real-world applications. This observation aligns with Denysenko et al. (2024), who noted that rapid technological advancements in industries often outpace educational practices, thereby creating skill gaps among graduates. Additionally, the lack of significant difference between lecturers and instructors in Table 4 suggests that both groups experience similar challenges and opportunities in applying their competencies to instructional delivery. This reinforces the argument by Kusmawan (2025) that a whole-institution approach is necessary to effectively develop and sustain digital competency among educators.

Conclusion

The study concludes that Industrial Technical Education (ITE) lecturers and instructors in Southwest Nigeria demonstrate relatively strong digital and pedagogical competency, as evidenced by the high mean responses obtained from the questionnaire data analysed in the study. The findings indicate that respondents perceived themselves as capable of integrating digital technologies, applying contemporary teaching strategies, and facilitating effective instructional delivery within technical education programmes. However, the responses also revealed areas requiring further improvement, particularly in advanced digital content development, practical ICT

application, and alignment of instructional practices with emerging industry technologies.

The study further revealed that there was no statistically significant difference between lecturers and instructors regarding their digital pedagogical competency and its influence on instructional delivery. This finding was established through the independent samples t-test analysis, which showed that both groups shared similar perceptions concerning the role of professional competency in enhancing instructional effectiveness. The similarity in responses suggests that lecturers and instructors within the selected institutions may have experienced comparable professional training opportunities, institutional expectations, and exposure to digital instructional practices.

Based on the questionnaire responses and statistical analyses obtained in the study, it can therefore be concluded that digital pedagogical competency remains an important factor influencing instructional delivery in Industrial Technical Education in Southwest Nigeria. Nevertheless, since the study relied primarily on self-reported questionnaire data, the findings reflect respondents' perceptions and reported practices rather than direct classroom observations or performance-based assessments. Consequently, future studies may incorporate classroom observation, practical teaching demonstrations, interviews, and students' learning outcomes to provide broader empirical evidence on the relationship between educators' competency and instructional delivery effectiveness.

Recommendations

1. Institutions should sustain and continuously strengthen existing digital pedagogical competency development programmes for Industrial Technical Education lecturers and instructors through periodic advanced training, refresher workshops, and professional learning opportunities in emerging educational technologies.
2. Government and institutional authorities should maintain and upgrade digital infrastructure such as internet facilities, smart instructional equipment, workshop technologies, and stable power supply to support and sustain the already positive level of digital instructional practices among educators.
3. Industrial Technical Education institutions should strengthen collaboration with relevant industries and professional bodies to ensure that lecturers and instructors remain updated with current technological trends, industrial practices, and workforce expectations.
4. Educational institutions should encourage lecturers and instructors to further develop competencies in specialised areas such as digital instructional material development, virtual simulations, and learner-centred digital teaching strategies to enhance instructional effectiveness and innovation.
5. School management should continue to provide supportive institutional policies, technical assistance, and motivational incentives that will encourage the continuous and effective utilisation of digital technologies in instructional delivery.

These recommendations are consistent with the study's findings, which revealed that lecturers and instructors already possess relatively high levels of digital pedagogical competency. Therefore, the recommendations are not intended to address

incompetence, but rather to sustain, strengthen, and further advance the existing competencies in response to evolving technological and industrial demands.

Implications of the Study

The findings of this study have significant implications for educational policy, practice, and research. For policymakers, the study highlights the need to prioritise teacher competency development as a key strategy for improving the quality of technical education. For educational institutions, the results emphasise the importance of investing in both human capacity and technological infrastructure to enhance instructional delivery.

For educators, the study underscores the need for continuous learning and adaptation to emerging technologies in order to remain effective in the digital age. Additionally, the findings suggest that improving professional competence can lead to greater student engagement, improved learning outcomes, and increased graduate employability. Finally, for researchers, the study provides a foundation for further investigations into specific factors affecting competency development and instructional effectiveness in TVET contexts.

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