

AN ASSESSMENT OF TEACHERS' COMPETENCE IN DIGITAL PEDAGOGY

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Abstract

The Department of Education (DepEd) has responded to this shift through policies such as DepEd Order No. 42, s. 2016, otherwise known as the National Adoption and Implementation of the Philippine Professional Standards for Teachers, which emphasizes ICT integration as a core teaching competency, and DepEd Order No. 11, s. 2022, which outlines the Basic Education Learning Continuity Plan, including digital learning strategies to ensure instructional resilience. These directives detailed the need for Filipino educators to develop robust digital pedagogy skills to meet evolving educational demands. This study aimed to assess the level of teachers' digital pedagogy competence in a district of a medium-sized division in Central Philippines for the School Year 2025-2026. The study made use of a self-made instrument, which was validated by three (3) experts, reliability tested, and administered to 58 public elementary schools. The study areas used to explore the competence of teachers in terms of their digital pedagogy included Delivery of Lesson Content, Daily Classroom Integration, and Productivity Application. The result of the study showed that the level of teachers' digital pedagogy competence was high in both Delivery of Lesson Content and Productivity Application and moderate in terms of Daily Classroom Integration. There was no significant difference in the level of teachers' digital pedagogy competence when grouped and compared according to Age, Highest Educational Attainment, Length of Service, Number of ICT-related trainings, and Average Family Monthly Income. With the moderate results obtained on Daily Classroom Integration, this study recommended the implementation of Digital Integration Enhancement Workshops and ICT Competency Building Series.

Keywords: Teachers' competence in digital pedagogy, ICT integration, and digital pedagogy

Bio-Profile

Baltazar N. Balagosa III has dedicated the past 17 years of his life to teaching; in fact, his wife is also a public school teacher. He completed his Bachelor's in Elementary Education at Silay Institute, and his Master's Degree in Administration and Supervision at STI West Negros University. Driven by his innate desire to provide quality education to his pupils, he actively implements ICT-based instruction and encourages his peers to do the same. He earned the 2024 Most Outstanding Teacher Award in the Schools Division of Silay City. With his active participation in implementing innovative teaching strategies, their team bagged the title as the Champion of the 2025 District Innovation Showdown.

Dr. Wilfredo O. Hermosura spent nearly 5 decades of his life as an educator, researcher, and academic leader. He graduated with a Bachelor's in Secondary Education from West Negros College, Cum Laude. He completed his master's in language at the University of the Philippines System and was later sent to Lancaster University in England through a government grant to specialize in reading and linguistics. He completed his Doctor of Education at Carlos Hilado Memorial State College. He served as Regional Supervisor for



Filipino and Early Childhood Education and later served as Principal IV of Dona Montserrat Lopez Memorial High School in Silay City. He also served as the Vice President for Academic Affairs at STI West Negros University. Currently, he is the research director of Silay Institute, Inc. and the interim President of Silay City College.

Introduction

Rationale

The use of tech in schools is now key worldwide, changing how teachers teach, handle classes, and connect with students. Across the Philippines, the Department of Education (DepEd) tackled this change through rules such as DepEd Order No. 42, s. 2016 - This one introduced teacher standards that treat ICT skills as essential, as well as DepEd Order No. 11, s. In 2022, setting up a plan for ongoing learning during disruptions by pushing digital methods to keep lessons going smoothly. Such moves underscored the need for local educators to develop a solid foundation in teaching with digital tools, enabling them to adapt to the evolving needs of the classroom.

Worldwide, instruments such as Europe's DigCompEdu or the tech standards for teachers set by UNESCO indicate that being digitally skilled is not only about the use of gadgets, but also about the teaching methods that matter. Research suggests that a significant number of teachers are capable of using software for their lessons; however, they are hesitant to incorporate it regularly into the classroom, and to a lesser extent, they struggle to enhance the speed or quality of teaching with it (Tondeur et al., 2018). These deficiencies become more frequent in less affluent areas, particularly where there is an uneven distribution of learning support and equipment.

This research looked into three key parts of digital teaching skills: sharing lesson material - using tech tools to make lessons more straightforward and more interesting - woven into regular class routines, meaning teachers actually use technology every day in real ways - not just once in a while - but consistently where it matters; along with using software for organizing work like planning classes, grading students, or handling admin duties. Earlier reports have examined broad computer knowledge among educators; however, few have investigated how these particular areas are represented across different types of teachers within public schools in the Philippines.

The significance of this research is mainly due to its capacity to provide information to precisely targeted professional growth programs that genuinely meet classroom needs and are in line with the digital transformation objectives of the Department of Education (DepEd).

By assessing competence across demographic variables such as age, tenure, educational attainment, and income, the research aims to uncover patterns and gaps that can guide policy and training design. The researcher is driven by a desire to boost classroom success using tech, so every teacher - no matter their experience - can build lessons that pull everyone in while preparing students for what is ahead.

Literature Review

Ally and Wark (2022) highlighted that the daily use of digital tools necessitates not only access but also the teaching of proficiency. Teachers must be equipped to embed technology meaningfully across instructional phases—from lesson planning to assessment. In Indonesia, Smart Technology is rapidly developing in the current digital era, and it is being widely used in people's lives. This also has an impact on changes in the concept of reading comprehension and classroom learning techniques. The change impacts reading or



understanding skills, as well as influencing the teaching staff. Writing and reading are now primarily done through the internet, utilizing various web-based tools that require a solid understanding of specific reading strategies. Proficient users of these skills can gain a deeper understanding of the various branches of science. Most people conduct reading tasks online and have access to a vast array of digital materials, so mastering specific comprehension techniques is crucial. Such understanding is essential when one tries to decipher the content of various scientific fields.

In 2023, Santiago and Reyes found that a teacher's age impacts their online teaching style. Each age group has its strengths. The younger teachers are quite adept at tailoring lessons to the actual needs of the children. It is impressive how they adapt their teaching to accommodate students' learning styles. On the other hand, the mature staff members provide excellent support to the team, as they maintain stability, adhere to tight routines, and smoothly manage sessions, all while handling virtual setups without even a hint of struggle. Research suggests that training that is designed for different age groups may help teachers further improve their skills in areas where they already excel. It could also help with stuff like really listening to what students are saying or getting those shared tech tools to fit right into the class.

Lazo and Mendoza (2022) noted that technology is improving everyone's needs these days. Compared to the younger ones who are quite enthusiastic in experimenting with technology, older teachers sometimes find it challenging to carry out online lessons or change their lessons according to students' comments. Reyes and Tolentino (2023) indicate that teachers new to the profession are generally quick to adopt tech-based, student-centered teaching methods. However, senior teachers continue to maintain their traditional method of instruction and are reluctant to change their ways. Additionally, the research by Alvarez and Bautista (2023) revealed that teachers, after receiving ICT training, can bring about more effective changes in their technological usage methods, primarily as a result of aligning instructional goals with engaging activities that encourage student participation.

The study by Lagos and Nabos (2023) emphasized that Filipino teachers are increasingly familiar with digital tools; however, their competence varies across domains such as content creation, collaboration, and file management. Teachers in island schools are skilled at creating digital content and maintaining organized files. However, they could use some help with collaborating on platforms and sharing resources in the cloud. So, some training must be provided, especially where they feel less comfortable with these online tools.

Theoretical Underpinnings

This study extends Garry Falloon's 2020 model for teacher tech skills, which is a handy tool to understand how teachers use digital tools in classrooms. Rather than just enumerating skills, it charts out what teachers fundamentally require to use technology effectively in their teaching. While the intention behind the design was to use the model for training programs, its focus is mainly on real classroom situations. The structure enables schools to remain adaptable as technology continues to evolve, while maintaining a focus on their primary teaching objectives.

The TDC Framework suggests that digital competence should not be considered a single technical skill, but rather a complex concept that encompasses pedagogical, technological, and contextual knowledge. It highlights the condition that a teacher should be able to select, adapt, and apply digital tools in a way that not only makes the learning process more efficient but also helps achieve the set instructional goals and meets the diverse needs of various classroom contexts. Falloon's model incorporates elements from both constructivist



and socio-cultural learning theories, considering digital competence as a concept that is changeable, dependent on experience, and can be influenced by reflection and collaboration.

In this research, the TDC model fits closely with the three main areas under review: first, sharing lesson material - this shows how well teachers use tech to make lessons more transparent and more interesting; also, using digital tools each day in class - this looks at whether tech helpfully is part of regular teaching; finally, handling work-related tasks - here, it is about applying digital resources for prep, grading, and job duties.

The setup helps assess how educators utilize technology in their teaching methods in these areas, as well as whether factors such as age, job tenure, education level, or pay influence their skills. Using the TDC model, this work adds to ongoing talks about digital instruction. It provides real-world data that could shape rules, guide teacher programs, and enhance school-based support within Philippine public schools.

Objectives

This study aims to assess the level of teachers' digital pedagogy competence in a district of a medium-sized division in Central Philippines for the School Year 2025-2026. Specifically, this study seeks to answer the following questions: 1) the profile of the respondents in terms of Age, Highest Educational Attainment, Length of Service, Number of ICT-related trainings, and Average Family Monthly Income; 2) determine the level of teachers' digital pedagogy competence in terms of Delivery of Lesson Content, Daily Classroom Integration, and Productivity Application; 3) determine whether there is a significant difference in the level of teachers' digital pedagogy competence when grouped and compared according to aforementioned variable.

Methodology

This section discusses the methods used to gather and analyze the data based on the specific predetermined objectives. This outline includes the research design, subject-respondents, research instruments, data collection procedures, ethical considerations, data analysis, and statistical methods.

Research Design

A descriptive research design was employed to assess the level of teachers' digital pedagogy competence in a medium-sized division district in Central Philippines for the 2025-2026 school year. Descriptive research is a type of research that describes existing events and conditions, which may lead to the formation of generalizations about the relationships between non-manipulated variables (Cristobal, 2013). This research design is appropriate for this study because the primary purpose is to investigate the relationship between the extent of teachers' skills and the level of learners' academic performance.

Respondents

The respondents in the study were 58 public school teachers from one of the districts in a medium-sized division. Since the number of respondents is manageable, total enumeration was used. Total enumeration is a form of "purposive sampling" that describes a single research technique where a researcher includes every member of a tiny, specifically defined population in the study. It is a specific type of purposive sampling, also known as total population sampling or census sampling. It is used when the entire population is small



and meets specific criteria, ensuring that every individual is included to obtain a complete picture (Laerd Dissertation, 2022).

Instrument

This study employed a self-designed questionnaire to assess the level of teachers' digital pedagogy competence. The questionnaire was divided into two parts. This study employed a self-designed questionnaire, which was divided into two parts: Part 1 collected profile information, and Part 2 was the questionnaire proper. The respondents were asked to rate each item using a five-point Likert scale, which ranges from 5 as always, 4 as often, 3 as sometimes, 2 as rarely, to 1 as never, reflecting their perceptions and experiences. This scale captures their quantitative data to analyze and interpret the participants' responses systematically.

Procedure for Data Collection

A formal letter was submitted to the office of the Schools Division Superintendent, asking permission and seeking approval to conduct the study after establishing the validity and reliability test of the instrument. Upon approval, the approved copy was furnished to the School Heads, and the administration of the instrument was arranged with said School Heads. Data collection was conducted face-to-face for three days, and was collected after 2 days, ensuring timely retrieval.

Data Analysis and Statistical Treatment

Objective 1 used a descriptive analytical scheme, and the statistical tools were Frequency Count and Percentage Distribution to determine the profile of the respondents in terms of Age, Highest Educational Attainment, Length of Service, Number of ICT-related trainings, and Average Family Monthly Income. Objective 2 also used a descriptive analytical scheme, and mean as the statistical tool to determine the level of teachers' digital pedagogy competence in terms of delivery of lesson content, daily classroom Integration, and productivity application. Objective 3 used a comparative analytical scheme to determine whether there is a significant difference in the level of teachers' digital pedagogy competence when grouped and compared according to the aforementioned variable. The statistical tool is the Mann-Whitney U test.

Ethical Considerations

According to the National Ethical Guidelines for Health and Social Science Research in the Philippines (Philippine Health Research Ethics Board, 2022), this study adhered to the core values of beneficence, fairness, and respect for individuals. A formal informed consent form was required of all participants, including coordinators, teachers, and school administrators. The aim, processes, dangers, advantages, and voluntary nature of involvement were all spelled out on the form. Permission for student-related data was acquired from guardians and school administrators when needed. Every piece of information gathered was kept private. Codes were used to anonymize participant names, school identifiers, and personal data.



Results and Discussions

This section summarizes the findings of the study, which come from careful data gathering, in-depth analysis, and thoughtful interpretation.

Table 1

Profile of the Respondents

Variables	Categories	Frequency	Percentage
Age	Younger (below 41 years old)	32	55.20
	Older (41 years old and above)	26	44.80
	Total	58	100.00
Highest Educational Attainment	Bachelor's Degree	31	53.40
	Master's Degree/PhD	27	46.60
	Total	58	100.00
Length of Service	Low (below 10 years)	32	55.20
	High (10 years and above)	26	44.80
	Total	58	100.00
Number of ICT-related Trainings	Few (below six trainings attended)	40	69.00
	Many (6 trainings attended and above)	18	31.00
	Total	58	100.00
Average Family Monthly Income	Lower (below 38,801 pesos)	28	48.30
	Higher (38,801 pesos and above)	30	51.70
	Total	58	100.00

Table 1 presents the demographic and professional profiles of the 58 teacher respondents who participated in the study. The data are categorized according to age, highest educational attainment, length of service, number of ICT-related trainings attended, and average monthly family income. Regarding their age, a slight majority of the respondents were classified as younger teachers (below 41 years old), comprising 32 individuals, or 55.2% of the sample. The remaining 26 teachers (44.8%) were aged 41 and above. Regarding their highest educational attainment, 31 teachers (53.4%) held a bachelor's degree, while 27 teachers (46.6%) had attained a master's degree or PhD. Regarding their length of service, 32 respondents (55.2%) had less than 10 years of teaching experience, while 26 teachers (44.8%) had 10 years or more of service. Based on the number of ICT-related trainings attended, the majority of teachers (40, or 69.0%) had participated in fewer than six trainings. In comparison, only 18 teachers (31.0%) had participated in 6 or more ICT-related professional development sessions. Regarding their average monthly family income, 28 respondents (48.3%) reported earning below ₱38,801, while 30 teachers (51.7%) had a monthly income of ₱38,801 or higher.



Level of Teachers' Digital Pedagogy Competence in terms of Delivery of Lesson Content, Delivery of Lesson Content, Productivity Application

Table 2

Level of Teachers' Digital Pedagogy Competence in terms of Delivery of Lesson Content

<i>As a teacher, what is your level of competence in . . . ?</i>	Mean	Interpretation
1. using multimedia presentations (e.g., PowerPoint, video clips) to enhance lesson content	3.57	High Level
2. Integrating interactive ICT tools (e.g., Kahoot, Quizizz) to reinforce concepts	3.81	High Level
3. using educational videos and animations to explain complex topics.	3.55	High Level
4. organizing digital resources in a structured manner for classroom instruction.	3.41	Moderate Level
5. personalizing digital lesson content based on learners' needs and interests	3.53	High Level
6. facilitating online class discussions using tools like Teams, Zoom, or Google Meet	3.52	High Level
7. using ICT to differentiate instructional strategies for various learner groups	3.64	High Level
8. incorporating simulations or virtual labs when relevant to the lesson.	3.59	High Level
9. ensuring that digital content aligns with curriculum standards and competencies.	3.79	High Level
10. evaluating the effectiveness of my ICT-based content delivery using learner feedback.	3.40	Moderate Level
Overall Mean	3.58	High Level

Table 2 illustrates the effectiveness of skilled teachers in utilizing technology to deliver lessons. With an average rating of 3.58, which is relatively high, they are usually good at integrating digital tools into their teaching. Their skill helps make lessons more straightforward, keeps students involved, and stays on track with what's supposed to be taught.

Teachers rated item 2 the highest, with an average rating of 3.81, which indicates solid confidence. That question asked how well they use fun tech tools like Kahoot or Quizizz to strengthen lessons. Instead of just lectures, many lean on these apps to keep students involved. As a result, classroom interaction tends to increase. These methods also help check understanding while teaching. So, digital quizzes aren't just extras - they fit right into daily instruction.

On the other hand, item 10, "As a teacher, what is your level of competence in evaluating the effectiveness of my ICT-based content delivery using learner feedback?" had the lowest mean score of 3.40, which means a moderate level of competence. The results suggest that educators are proficient in using digital tools for content delivery but may require additional support in systematically collecting and analyzing student feedback to refine their digital instructional strategies. The moderate evaluation suggests a possible locus of instructional training, primarily characterized by reflective practice and data-informed teaching.

The evidence presented here is consistent with the research by Dela Cruz and Manalo (2021), which examined the educational competencies of Filipino teachers. The study highlighted that teachers are generally proficient in utilizing digital tools for content delivery; however, they tend to be weak in evaluating their instructional effectiveness and applying feedback from learners, which serves as a support for instruction. Likewise, digital pedagogy, as per Ally and Wark (2022), requires teachers to be not only technically proficient but also reflective and adaptive in their teaching practices to achieve the desired learning outcome.



Table 3

Level of Teachers' Digital Pedagogy Competence in terms of Daily Classroom Integration

<i>As a teacher, what is your level of competence in integrating . . . ?</i>	Mean	Interpretation
1. digital platforms (e.g., LMS) to manage and post daily lessons	3.48	Moderate Level
2. ICT-based learning activities to enhance student engagement	3.67	High Level
3. technology for warm-up exercises or bell-ringer activities	3.47	Moderate Level
4. ICT tools in formative assessments during lessons	3.21	Moderate Level
5. digital lesson plans with embedded online content	3.60	High Level
6. students' use of digital tools during group or individual tasks	3.50	High Level
7. the monitoring of students' learning progress using classroom technology	3.57	High Level
8. real-world scenarios into lessons using digital media	3.36	Moderate Level
9. daily time allocation for students to interact with ICT in their learning	3.26	Moderate Level
10. teaching strategies based on the availability of digital resources	3.57	High Level
Overall Mean	3.47	Moderate Level

Table 3 shows the extent to which the teachers' digital pedagogy competence was reflected in their daily classroom integration. The total mean score is 3.47, which corresponds to an average level. It means that teachers can show moderate competence in using digital devices as part of their daily teaching routines. However, teachers still need to be able to integrate these devices more consistently and strategically.

Item 2, "As a teacher, what is your level of competence in integrating ICT-based learning activities to enhance student engagement?" received the highest mean score of 3.67, indicating a high level of competence. This suggests that teachers are confident in using technology to foster active participation and motivation among learners, particularly through interactive and student-centered digital tasks.

In contrast, item 4, "As a teacher, what is your level of competence in integrating ICT tools in formative assessments during lessons?" garnered the lowest mean score of 3.21, indicating a moderate level of competence. This suggests that while teachers may be familiar with digital platforms, they may require additional support in utilizing technology to monitor learning progress in real-time. The moderate rating highlights a potential area for professional development, especially in leveraging ICT for assessment and feedback.

These findings align with the study by Ally and Wark (2022), which emphasized that daily integration of digital tools requires not only access but also pedagogical fluency. Teachers must be equipped to embed technology meaningfully across instructional phases—from lesson planning to assessment. Similarly, Dela Cruz and Manalo (2021) noted that while Filipino educators are increasingly adopting digital strategies, gaps remain in the consistent application of these strategies at the classroom level, particularly in formative assessment and differentiated instruction.

Table 4

Level of Teachers' Digital Pedagogy Competence in terms of Daily Productivity Application

<i>As a teacher, what is your level of competence in . . . ?</i>	Mean	Interpretation
1. using word processing software (e.g., MS Word) to create instructional materials.	3.55	High Level
2. preparing digital lesson slides using presentation tools like PowerPoint or Google Slides.	3.47	Moderate Level



3. recording grades and assessment data using spreadsheet applications (e.g., Excel).	3.47	Moderate Level
4. creating classroom forms and surveys using Google Forms or similar apps.	3.57	High Level
5. using online calendars and planners to organize teaching schedules.	3.60	High Level
6. sharing class documents and resources through cloud-based platforms.	3.24	Moderate Level
7. collaborating with peers on lesson planning using shared productivity apps.	3.60	High Level
8. generating student progress reports using templates or automated tools.	3.50	High Level
9. managing classroom files using digital storage systems.	3.66	High Level
10. utilizing productivity tools to support instructional decision-making and reflection.	3.38	Moderate Level
Overall Mean	3.50	High Level

Table 4 presents the level of teachers' digital pedagogy competence in daily productivity application. The overall mean score is 3.50, interpreted as a high level, indicating that teachers generally demonstrate strong proficiency in using digital productivity tools to support instructional tasks, collaboration, and classroom management. This suggests that such tools are well-integrated into teachers' professional routines, enhancing both efficiency and planning.

Item 9, "As a teacher, what is your level of competence in managing classroom files using digital storage systems?" received the highest mean score of 3.66, indicating a high level of competence. This reflects teachers' confidence in organizing and accessing instructional resources through digital platforms, which is essential for maintaining streamlined workflows and ensuring the availability of resources. In contrast, item 6, "As a teacher, what is your level of competence in sharing class documents and resources through cloud-based platforms?" garnered the lowest mean score of 3.24, indicating a moderate level of competence. This suggests that while teachers may be skilled at creating and managing digital content, they may require additional support in utilizing cloud-based systems to distribute resources and facilitate collaborative access. The moderate rating highlights a potential area for professional development, especially in optimizing cloud-based sharing for instructional continuity and peer collaboration.

These findings are consistent with the study by Lagos and Nabos (2023), which emphasized that while Filipino teachers are increasingly familiar with digital tools, their competence varies across domains such as content creation, collaboration, and file management. The study found that teachers in island municipalities demonstrated stronger skills in digital content creation and file organization, but needed further training in collaborative platforms and cloud-based sharing. This underscores the importance of targeted digital literacy programs that address specific gaps in productivity tool usage.

Comparative Analysis on the Significant Difference in the Level of Teachers' Digital Pedagogy Competence when grouped and compared according to the aforementioned Variables

Table 5

Significant Difference in the Level of Teachers' Digital Pedagogy Competence in Delivery of Lesson Content when grouped according to Age, Highest Educational Attainment, Length of Service, Number of ICT-related trainings, and Average Family Monthly Income



Variable	Category	N	Mean rank	Mann-Whitney U-Test	p-value	Sig. level	Interpretation
Age	Younger	32	28.77	392.500	.712		Not Significant
	Older	26	30.40				
Highest Educational Attainment	Lower (Bachelor's Degree)	31	27.44	354.500	.315	0.05	Not Significant
	Higher (Master's Degree/PhD)	27	31.87				
Length of Service	Shorter	32	30.59	381.000	.582		Not Significant
	Longer	26	28.15				
Number of ICT-related trainings	Few	40	29.88	345.000	.800		Not Significant
	Many	18	28.67				
Average Family Monthly Income	Lower	28	29.75	413.000	.913		Not Significant
	Higher	30	29.27				

Table 5 presents the differences in the level of teachers' digital pedagogy competence in the delivery of lesson content, when grouped and compared according to age, highest educational attainment, length of service, number of ICT-related trainings, and average family monthly income. The analysis was conducted using the Mann-Whitney U test, a non-parametric statistical method suitable for comparing independent groups.

By age, younger teachers (N = 32, Mean rank = 28.77) and older teachers (N = 26, Mean rank = 30.40) showed no statistically significant difference, with a p-value of 0.712. Although the older group had a slightly higher mean rank, the result did not meet the conventional threshold of significance ($p < 0.05$), indicating that age does not significantly affect digital competence in lesson delivery.

By educational attainment, teachers with lower qualifications (N = 31, Mean rank = 27.44) and those with higher qualifications (N = 27, Mean rank = 31.87) also showed no significant difference ($p = 0.315$). This suggests that both groups demonstrate comparable levels of digital pedagogy competence, regardless of academic credentials.

By length of service, teachers with shorter tenure (N = 32, Mean rank = 30.59) and those with longer tenure (N = 26, Mean rank = 28.15) showed no significant difference ($p = 0.582$), implying that years of experience do not substantially influence digital competence in lesson delivery.

By Number of ICT-related Trainings, teachers who attended fewer trainings (N = 40, Mean rank = 29.88) and those who attended more (N = 18, Mean rank = 28.67) showed no significant difference ($p = 0.800$). This indicates that training frequency alone may not be a decisive factor in shaping digital pedagogy competence.

By average family monthly income, teachers from lower-income households (N = 28, Mean rank = 29.75) and those from higher-income households (N = 30, Mean rank = 29.27) likewise showed no statistically significant difference ($p = 0.913$). This suggests that socioeconomic background does not substantially impact teachers' ability to deliver digital lesson content effectively.

These findings are consistent with the study by Gudmundsdottir and Hatlevik (2020), which found that demographic variables such as age, income, and educational attainment had limited predictive power over digital instructional effectiveness. The authors emphasized that



professional development, school culture, and access to digital infrastructure are more influential factors in shaping teachers' digital pedagogy competence.

Overall, the hypothesis, which states that "There is no significant difference in the level of teachers' digital pedagogy competence when grouped and compared according to aforementioned variables," is hereby accepted.

Table 6

Significant Difference in the Level of Teachers' Digital Pedagogy Competence in Daily Classroom Integration when grouped according to Age, Highest Educational Attainment, Length of Service, Number of ICT-related Trainings, and Average Family Monthly Income

Variable	Category	N	Mean rank	Mann-Whitney U	p-value	Sig. level	Interpretation
Age	Younger	32	32.81	310.000	.094		Not Significant
	Older	26	25.42				
Highest Educational Attainment	Bachelor's Degree	31	28.19	364.000	.390		Not Significant
	Master's Degree/PhD	27	31.00				
Length of Service	Low	32	32.64	315.500	.112	0.05	Not Significant
	High	26	25.63				
Number of ICT-related trainings	Low	40	27.26	270.500	.128		Not Significant
	High	18	34.47				
Average Family Monthly Income	Low	28	26.39	333.000	.171		Not Significant
	High	30	32.40				

Table 6 presents the differences in the level of teachers' digital pedagogy competence in daily classroom integration, when grouped and compared according to age, highest educational attainment, length of service, number of ICT-related trainings, and average family monthly income. The analysis was conducted using the Mann-Whitney U test, a non-parametric statistical method suitable for comparing independent groups.

By age, younger teachers (N = 32, Mean rank = 32.81) and older teachers (N = 26, Mean rank = 25.42) showed no statistically significant difference, with a p-value of 0.094. Although the younger group had a higher mean rank, the result did not meet the conventional threshold of significance ($p < 0.05$), indicating that age does not significantly affect digital competence in daily classroom integration.

By educational attainment, teachers with a bachelor's degree (n = 31, mean rank = 28.19) and those with a master's degree/PhD (N = 27, mean rank = 31.00) also showed no significant difference ($p = 0.390$). This suggests that both groups demonstrate comparable levels of digital pedagogy competence, regardless of academic qualifications.

By length of service, teachers with shorter tenure (N = 32, mean rank = 32.64) and those with longer tenure (N = 26, mean rank = 25.63) showed no significant difference ($p = 0.112$), implying that years of experience do not substantially influence digital competence in daily classroom integration.

By number of ICT-related trainings, teachers who attended fewer trainings (N = 40, mean rank = 27.26) and those who attended more (N = 18, mean rank = 34.47) showed no significant difference ($p = 0.128$). This indicates that training frequency alone may not be a decisive factor in shaping digital pedagogy competence.



By average family monthly income, teachers from lower-income households (N = 28, mean rank = 26.39) and those from higher-income households (N = 30, mean rank = 32.40) likewise showed no statistically significant difference (p = 0.171). This suggests that socioeconomic background does not substantially impact teachers' ability to integrate digital tools into their daily classroom routines.

These findings are consistent with the study by Gudmundsdottir and Hatlevik (2020), which found that demographic variables such as age, income, and educational attainment had limited predictive power over digital instructional effectiveness. The authors emphasized that professional development, school culture, and access to digital infrastructure are more influential factors in shaping teachers' digital pedagogy competence.

Overall, the hypothesis, which states that “There is no significant difference in the level of teachers' digital pedagogy competence when grouped and compared according to aforementioned variables,” is hereby accepted.

Table 7

Significant Difference in the Level of Teachers' Digital Pedagogy Competence in Productivity Application when grouped according to Age, Highest Educational Attainment, Length of Service, Number of ICT-related Trainings, and Average Family Monthly Income

Variable	Category	N	Mean rank	Mann-Whitney U	p-value	Sig. level	Interpretation
Age	Younger	32	30.08	397.500	.768	0.05	Not Significant
	Older	26	28.79				
Highest Educational Attainment	Bachelor's Degree	31	28.19	378.000	.520	0.05	Not Significant
	Master's Degree/PhD	27	31.00				
Length of Service	Low	32	31.69	346.000	.265	0.05	Not Significant
	High	26	26.81				
Number of ICT-related trainings	Low	40	29.30	352.000	.891	0.05	Not Significant
	High	18	29.94				
Average Family Monthly Income	Low	28	30.11	403.000	.788	0.05	Not Significant
	High	30	28.93				

Table 7 presents the differences in the level of teachers' digital pedagogy competence in productivity applications, when grouped and compared according to age, highest educational attainment, length of service, number of ICT-related trainings, and average family monthly income. The analysis was conducted using the Mann-Whitney U test, a non-parametric statistical method suitable for comparing independent groups.

By age, younger teachers (N = 32, mean rank = 30.08) and older teachers (N = 26, mean rank = 28.79) showed no statistically significant difference, with a p-value of 0.768. This suggests that age does not significantly impact teachers' ability to utilize productivity tools for instructional purposes.

By educational attainment, teachers with a bachelor's degree (N = 31, mean rank = 28.19) and those with a master's degree/PhD (N = 27, mean rank = 31.00) showed no significant difference (p = 0.520). This suggests that academic qualifications do not substantially influence digital productivity competence.



By length of service, teachers with shorter tenure ($N = 32$, mean rank = 31.69) and those with longer tenure ($N = 26$, mean rank = 26.81) showed no significant difference ($p = 0.265$), suggesting that years of experience do not have a substantial impact on competence in productivity applications.

By number of ICT-related trainings, teachers who attended fewer trainings ($N = 40$, mean rank = 29.30) and those who attended more ($N = 18$, mean rank = 29.94) showed no significant difference ($p = 0.891$). This suggests that training frequency alone may not be a decisive factor in shaping digital productivity skills.

By average family monthly income, teachers from lower-income households ($N = 28$, mean rank = 30.11) and those from higher-income households ($N = 30$, mean rank = 29.94) likewise showed no statistically significant difference ($p = 0.788$). This implies that socioeconomic background does not substantially affect teachers' competence in using productivity applications.

These findings are consistent with the study by Hatlevik and Christophersen (2023), which found that demographic factors, such as age, income, and educational attainment, had a limited influence on teachers' digital productivity skills. Instead, the study emphasized that access to digital infrastructure, collaborative culture, and ongoing support are more critical in shaping competence in productivity applications.

Overall, the hypothesis, which states that "There is no significant difference in the level of teachers' digital pedagogy competence when grouped and compared according to aforementioned variables," is hereby accepted.

Conclusions

Educators showed great skill in utilizing digital pedagogy during lesson delivery and the use of productivity tools. In contrast, the daily use of these tools in the classroom was at a moderate level. The trend was similar across different age groups, levels of education, length of service, participation in ICT-related training, and income levels, which suggests that skill is widely spread and not significantly influenced by demographic and professional factors. The results emphasize the necessity of using digital tools efficiently in daily practice and, at the same time, providing support to all teacher profiles without any discrimination.

The level of teachers' digital pedagogy competence was high in both the delivery of lesson content and the application of productivity tools, and moderate in daily classroom integration. This pattern reveals that while teachers are proficient in using digital tools for content delivery and productivity, there is a need to enhance their ability to integrate these tools into everyday classroom routines seamlessly.

When grouped by age, highest educational attainment, length of service, number of ICT-related trainings, and average family monthly income, teachers' digital pedagogy competence remained high in the delivery of lesson content and productivity application, and moderate in daily classroom integration. This consistency across groupings suggests that digital pedagogy competence is broadly distributed and not confined to specific demographic or professional categories.

There was no significant difference in the level of teachers' digital pedagogy competence when grouped and compared according to age, highest educational attainment, length of service, number of ICT-related trainings, and average family monthly income. This result supports the notion that digital pedagogy competence is not determined by demographic or socio-economic factors, reinforcing the importance of universal access to digital teaching resources and standardized professional development.



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Authorship Contribution Statement

Balagosa: Concept and design, literature review, data collection, analysis, and interpretation.

Hermosura: Final concept editing, guidance and supervision, and manuscript proof-reading.

Conflict of Interest

The authors declare the absence of any conflict of interest that could have influenced the content or conclusions of this paper. They affirm that no financial, personal, or professional relationships with other individuals or organizations have compromised the objectivity, integrity, or impartiality of the research work. As a final point, no external parties influenced the study design, data collection, analysis, or interpretation.

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