Digital teaching competence of teachers in the public elementary schools of Sta. Cruz district

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Abstract

The rapid evolution of technology has profoundly altered multiple domains, with education being among the most affected. With this, study was conducted to determine the level of Digital Teaching Competence of Teachers in the Public Elementary Schools of Sta. Cruz District which will be a basis in the formulation of a localized framework for digital teaching and LAC session. This research employed developmental-descriptive research design that made use of questionnaire checklist which was adapted from DigCompEdu and was modified to fit into the target purpose of the study. The modified questionnaire checklist was validated by 15 key teachers from Sta. Lucia District. Specifically, the study aimed to determine the level of digital teaching competence of teachers in the public elementary schools of Sta. Cruz District. The digital teaching competence of teachers was classified into professional engagement, digital resources, teaching and learning, assessment of learning, empowering learners, and facilitating learners' digital competence. The findings revealed that the respondents are very highly competent in digital teaching along professional engagement, using digital resources in teaching and learning, empowering learners, and facilitating learners' digital competence. They also have a high competence in using digital technologies in assessment of learning. Most teachers use digital resources and technologies in teaching and professional development. However, they need to enhance their digital teaching competence in creating, modifying, and facilitating learning. Frequent use can boost competence and motivation. A localized framework can identify areas for improvement. With these findings, the study suggests that teachers should receive more ICT training to stay updated on digital teaching trends, and the Department of Education (DepEd) should provide sufficient digital tools and resources. Administrators should motivate teachers to pursue digital learning development. Additionally, a localized training framework on digital teaching competence can enhance teachers' digital teaching competence. Future research should validate these findings.

Keywords: digital teaching competence, level of digital teaching competence, localized digital teaching competence framework, level of acceptability

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1. Introduction

The dynamic nature of global education has presented challenges for a wide range of stakeholders, including parents, teachers, students, administrators, and education officials. Given the rapid advancement of technology and the expanding nature of the workplace in the 21st century, education and learning have been especially influential in shifting public opinion. Professionals with the necessary technical skills required using various technologies in the workplace, in addition to the competencies from textbooks and acquired communication; making critical and analytical thinking skills be employed in industries and workplaces, most especially in schools.

Digital teaching or digital education is the innovative use of digital tools and technologies during teaching and learning and is often referred to as Technology Enhanced Learning (TEL) or e-learning (Institute for Academic Development, University of Edinburgh, 2018). It is an umbrella term for any education that is conducted at least partly in, with or through digital technologies. This is a deliberately broad definition that could encompass the use of technology in traditional classrooms, blended learning (which combines online and face-to-face instruction) and education that takes place entirely online (Allan, 2019). Meanwhile, digital competence can be broadly defined as the confident, critical, and creative use of ICT to achieve goals related to work, employability, learning, leisure, inclusion and/or participation in society (Redecker, 2017).

The increase adoption of digitized and platformed practices clearly has implications for how teaching and learning take formal schooling is being carried out. The change of place within technology-mediated contexts but also for how teachers and students navigate these digital worlds (Pangarazio et. al, 2020). Teachers entering the profession need to be prepared for schools and education systems that are becoming increasingly digitized. The importance of learning to learn approach and the contemporary digital transformations shift the emphasis to the demands to understand how to design digital environments to enhance students' agentic capacity to learn (Engeness, 2021). Teachers must have essential skills and knowledge to fully utilize and take full advantage of the potential of technology in the classroom (Ivus *et al.*, 2021). Studies describe that technology integration would improve teaching instructions and learning experiences (Albacete and Banhaw, 2019). The United Nations Educational, Scientific and Cultural Organization (UNESCO) even stresses the significance of Information and Communication Technology (ICT) on student learning, especially its importance for the teachers to be digitally literate and understand how to incorporate it into the curriculum (UNESCO 2018). Digital technologies are predicted to become further embedded across the schooling sector and influence the work of teachers (Freeman *et al.*, 2017).

As the effect of school closure following the coronavirus lockdowns, the use of virtual classrooms has extremely rocketed to replace face-to-face school interactions. The way teachers communicate with students, how they deliver teaching materials, and how they assess students' performances have massively been changed. In such situations, technology-assisted learning tools are crucial to be consistently utilized by teachers and students at all levels from elementary and secondary schools to higher education (Mahmod, 2021; Wahyunigsih and Baidi, 2021). This change has resulted in new habits and adaptation in methods and approaches of teaching, particularly in the era of post pandemic recovery. This prompted teachers to be equipped with satisfactory knowledge and skills of digital teaching, which is found difficult for them (Webb and Doman, 2020), particularly in a developing country, like the Philippines.

The presence of infrastructure has been regarded as an important ingredient to make technology integration in schools successful. However, despite the great efforts exerted by the schools in providing the necessary technological resources, gaps still exist on how teachers utilize technology as a teaching and learning tool. Aldunate and Nussbaum (2015) underscored that the capacity of teachers to apply innovations in their own

respective classes depends on the complexity of technology and their willingness to learn technology. They added that teachers who are early technology adopters and commit a significant portion of their time incorporating educational technology in their teaching are more likely to adopt new technology, regardless of its complexities.

Another study from Flack, *et al.* (2020) showed that teachers slightly acquired digital teaching competencies as reflected by disparity between their beliefs and practices about digital learning activities such as what happened in Australia. In the Philippines, the Department of Education (DepEd) initially joined other countries to be globally competitive through the adoption of the Enhanced Basic Education Act of 2013 (RA 10533), establishing the K to 12 curriculum. This act aims to adapt to the 21st century changes around the country and around the world through established curriculum reforms, including media technology skills, life and career skills, communication skills and learning and innovation skills. Contrastingly, Abella and Dela Rosa (2023) discussed that due to technological, individual, domestic, institutional, and community barriers, the Philippines needs to achieve a digitally prepared educational system. The study also found that the age, pre-service ICT training, and attitude toward ICT use have significantly impacted the degree of digital literacy and digital competency among teachers, thus affecting their digital teaching competence. Meanwhile, the relevant findings of Fabito *et al.* (2020) confirmed that faculty members may have failed to adapt to the needs of the students in an online learning environment.

Clearly, the effectiveness of incorporating technological innovation in teaching and learning for an individual or student has already been established by several research. Different technologies that have been created and applied directly advance and enhance student performance. As school districts and even state governments require its usage more and more frequently each year, technology's influence in the field of education is always growing. Educators of this millennium need special skills and ought to be changed from traditional to transformational. In a similar direction, O'Neal *et al.* (2017) scrutinized elementary school teachers' beliefs about the role of technology in teaching and learning in the southeastern United States. The results indicated that although teachers see the value of technology for teaching and learning, they require more guidance on what constitutes digital teaching and how to effectively integrate technology.

Based on the experience and observations of the researcher, the pandemic has revealed the significant shortcomings of the Philippine educational system and the ill-prepared teaching staff concerning digital teaching. It is true that teachers integrate technology in their lessons nowadays, however utilization and capacity with other digital teaching tools have yet to be explored by teachers. The researcher also observed in her locality that there are still some teachers who find it hard to use even the Microsoft Office tools, like the Power Point Presentation, which was categorized by Ruggiero and Mong, 2015 as most used type of technology by teachers, Microsoft Outlook, and even Google Sheets and Google Forms. Some are also not familiar on the new trends like Canva, Filmora, and other interactive presentations used in teaching. Teachers are teaching through video, but they are not always teaching better than they would if they were standing in front of a classroom. More massive open online courses are being offered and taken up, but many are not for primary education and do not address the learning issue. Last, Program for International Student Assessment (PISA) 2018 results revealed that teachers are having difficulties in designing performance tasks and authentic problem-solving activities.

Finally, the abovementioned matters and discussions inspired the researcher to investigate the digital teaching competence of public elementary school teachers in Sta. Cruz District. In addition, the researcher also presumed that fewer articles regarding this study have been made in the Philippine context, especially in the elementary level, and often, the focus is more of students' use of technology not on teachers. The study aimed to determine the level of digital teaching competence of teachers in the public elementary schools of Sta. Cruz District which will be a basis in the formulation of a localized training framework for digital teaching and learning action cell (LAC) sessions.

2. Methods

Research Design - This research study used a descriptive-developmental design to collect demographic data

on digital teaching competence among elementary teachers in Sta. Cruz District. The descriptive method describes, records and analyzes current behavior, while developmental design focuses on designing and evaluating instructional programs. This approach ensures consistency and effectiveness in the study.

Population and Locale of the Study - The study was conducted in public schools in Sta. Cruz District, Ilocos Sur, with 53 teachers from 5 schools in Zone 1. Total enumeration was used to ensure comprehensive coverage, focusing on Zone 1. A questionnaire checklist was used to collect data, divided into two parts: the respondents' profile and digital teaching competence. The questionnaire was adapted from the European Framework for Digital Competence of Educators, however there were modifications done to fit into the target of the study. This was validated by 15 key teachers from another district, specifically Sta. Lucia District.

Data Gathering Procedure - The conduct of the study took into consideration several steps. The first of which is observation and formulation of research problem and working title. A permission to conduct research was secured from the Public Schools Division Superintendent of Schools Division of Ilocos Sur. Before proceeding to the data gathering process, which is the distribution of questionnaires to the respondents, the questionnaire was validated by 15 key teachers from another district, specifically Sta. Lucia District. The researcher asked permission to the Immediate Supervisor of the district to float the validity questionnaire to the 15 teachers of the district. After the validation of the questionnaire, the respondents of the study were identified. Ethical considerations were made before floating the questionnaire. The researcher then made a letter for the approval to conduct the study in the identified public elementary schools of Sta. Cruz District, through the Public Schools District Supervisor. Upon approval, the researcher seeks the consent of the respondents to participate in the study. With their approval, the researcher administered the questionnaire to the identified respondents of the study. After collecting all the data, the results were collated, tabulated, analyzed, and interpreted using frequency count, mean values, and descriptive equivalent ratings. Furthermore, Log Frame Analysis was used to triangulate and substantiate the discussion on the strengths and weaknesses of the digital teaching competence. The data analyzed served as the basis in the development of localized training framework on the digital teaching competence of teachers in Sta. Cruz District.

Data Analysis - The steps in the data analysis serve as a critical process for extracting meaningful insights from the raw data gathered. By employing these steps and tools, data analysis helped the researcher come up with the results. These steps include the following:

➢ To determine the profile of the respondents, frequency count and percentages were used.

➢ To determine the level of competence, the weighted mean was used.

➢ For the strengths and weaknesses on the level of competence, a mean of 4.20 and above were considered strengths while 4.19 and below were considered weaknesses. Furthermore, Log Frame Analysis will be used to further analyze the identified strengths and weaknesses to come up with desired output.

➢ To determine the level of acceptability of the output, weighted mean was used.

Ethical Consideration - In conducting this study, the researcher secured permission from the Office of the Public Schools Division Superintendent of Ilocos Sur. Likewise, the consent of the respondents was sought through an informed consent form. They were also assured that the participation in this study is voluntary, and they can withdraw any time they want. Finally, the researcher shall ensure that all data to be gathered in this study shall be treated with utmost confidentiality and will only be used for research purposes.

3. Results and discussions

This part presents the results, discussions, conclusions, and recommendations in accordance with the problem. The profile of the teacher respondents can be found on table 1. This table provides a comprehensive overview of the demographic and professional characteristics of the respondents involved in the study. It can be seen on the table that the total number of respondents is 53, equivalent to 100%. This means that all respondents participated

in the study.

Table 1
Profile of the Respondents

Profile	f	%
AGE		
30 – below	5	9.43
31 – 39	14	26.42
40 – 49	21	39.62
50 & above	13	24.53
Total	53	100
GENDER		
Male	6	11.32
Female	47	88.68
Total	53	100.00
HIGHEST EDUCATIONAL ATTAINMENT		
Doctorate Degree	2	3.77
Doctorate Units	7	13.21
MA / MS Degree	10	18.87
MA / MS Units	34	64.15
Total	53	100.00
TEACHING POSITION		
Master Teacher II	1	1.89
Master Teacher I	6	11.32
Teacher III	35	66.04
Teacher II	6	11.32
Teacher I	5	9.43
Total	53	100.00
YEARS IN SERVICE		
1-4	4	7.55
5 - 9	16	30.19
10 - 14	7	13.21
15 - 19	10	18.87
20 - above	16	30.19
Total	53	100.00
DESIGNATION		
Subject Area Coordinator	20	37.74
ICT Coordinator	5	9.43
Property Custodian	5	9.43
Others	23	43.40
Total	53	100.00
IPCR Rating		
4-500 - 5.00 / O	49	92.45
3.55 - 4.499 / VS	4	7.55
2-50 - 3.49 / S	0	0.00
1.50 - 2.49 / US	0	0.00
Total	53	100.00
TRAININGS / SEMINARS ATTENDED		
International	2	3.77
National	11	20.75
Division	23	43.40
District	17	32.08
Total	53	100.00

The study focuses on the demographic and professional characteristics of 53 teacher respondents, primarily aged 40-49 in Zone 1. The majority are female, with 88.68% of the total sample being female. The highest educational attainment among the respondents is 64.15%, with most having completed MA/MS units without obtaining a degree. The majority of teachers are Teacher III (66.04%), with a diverse range of experience. The largest group has been in service for 5-9 years (30.19%), followed by those with 20 or more years. The majority of teachers hold the designation of Subject Area Coordinator (37.54%), followed by ICT Coordinator (9.43%), Property Custodian (9.43%), and other roles categorized as "Others" (43.40%). The majority of respondents have an IPCR rating of 4.500 to 5.00, indicating outstanding performance (92.45%). The majority of respondents have attended various training and seminar programs, with a small proportion attending national and international-level

events. The profile of respondents is important in identifying the level of digital teaching competence because it provides context and insights into the factors that may influence an individual's abilities, experiences, and comfort with using digital tools in teaching. Factors such as age, years of teaching experience, and educational background can influence an educator's familiarity and proficiency with digital technologies.

Level of Digital Teaching Competence

Table 2
Level of Digital Teaching Competence along Professional Engagement

Indicative Statement	Mean	DR
Systematically use different digital channels to enhance communication with students, parents, and colleagues: (e.g. emails, blogs, the school's website, Apps)	4.37	VHC
Use digital technologies to work together with colleagues inside and outside educational organization.	4.33	VHC
Actively develop digital teaching skills	4.29	VHC
Participate in online training opportunities (e.g. online courses, MOOCs, webinars)	4.20	VHC
Communicate responsibly and ethically with digital technologies, e.g. respecting netiquette, and acceptable use policies (AUP).	4.33	VHC
Grand Mean	4.30	VHC

Legend:

Scale	Mean Range	Descriptive Equivalent
5	4.20-5.00	Very Highly Competent (VHC)
4	3.40-4.19	Highly Competent (HC)
3	2.60-3.39	Moderately Competent (MC)
2	1.80-2.59	Fairly Competent (FC)
1	1.00-1.79	Least Competent (LC)

The level of digital teaching competence along professional engagement can be seen in table 2. It registers a grand mean of 4.30 with a description of very highly competent. This means that most of the respondent teachers were competent in their engagement of professional task aside from their teaching and learning tasks using digital technology. However, participation in online training opportunities, such as courses, MOOCs, and webinars, is low, with some teachers unable to attend due to downgraded gadgets, unstable internet connections, registration fees, and technical know-how. Clearly, professional engagement is pivotal in the teaching and learning process especially that learners are all digital natives. Regardless of the age of the teacher, he/she needs to be acquainted and learn how to utilize different modern equipment and access different digital platforms in rendering instructional tasks. Teachers use of digital technologies allows them to engage collaboratively with other educators, and exchanging and acquiring expertise and familiarity, and cooperatively create pedagogy procedures. The findings also suggest that teachers use digital resources for continuous professional development.

Table 3 presents the level of digital teaching competence along digital resources. It has a grand mean of 4.35 with a description of very highly competent. This means that most of the teacher respondents were competent in using and accessing different digital resources that benefit the teaching and learning process. Teachers are increasingly using digital resources to facilitate teaching and learning, using websites like LRMDS, LMS, and YouTube to deliver lessons. However, some teachers struggle to create their own digital resources due to traditional methods, fear of integrating technology, and the constant updates in digital tools and devices. Some teachers use existing resources for repetition rather than modifying them to fit learners' needs. Despite these efforts, some teachers still struggle to adapt to the changing features of digital tools and devices. The finding implies that digital resources provide great help in promoting a learner centered environment. Teachers identify, assess, and select digital resources for teaching and learning by considering the specific learning objective, context, pedagogical approach, and learner group. It also suggests that teachers must respect and correctly apply privacy and copyright rules to protect sensitive content.

Table 3
Level of Digital Teaching Competence along Digital Resources

Indicative Statement	Mean	DR
Use different internet sites and search strategies to find and select a range of different digital resources.	4.53	VHC
Create my own digital resources and modify existing ones to adapt them to one's needs.	4.12	HC
Effectively protect sensitive content (e.g. exams, students' grades, personal data)	4.48	VHC
Address a specific learning objective when selecting, modifying, combining, and creating digital learning resources.	4.33	VHC
Co-creates learning resources with colleagues	4.29	VHC
Grand Mean	4.35	VHC

Legend:

Scale	Mean Range	Descriptive Equivalent
5	4.20-5.00	Very Highly Competent (VHC)
4	3.40-4.19	Highly Competent (HC)
3	2.60-3.39	Moderately Competent (MC)
2	1.80-2.59	Fairly Competent (FC)
1	1.00-1.79	Least Competent (LC)

It can also be gleaned from the results that teachers need to create their own digital resources and modify existing ones to adapt them to one's needs.

Table 4
Level of Digital Teaching Competence along Teaching and Learning

Indicative Statement	Mean	DR
Carefully consider how, when, and why to use digital technologies in class, to ensure that they are used with added value	4.51	VHC
Monitor students' activities and interactions in the collaborative online environments we use	4.4	VHC
When students work in groups or teams, they use digital technologies to acquire and document evidence	4.01	HC
Use digital technologies to allow students to plan, document and monitor their learning themselves (e.g. quizzes for self-assessment, e-portfolios for documentation and showcasing, online diaries/blogs for reflection)	4.14	HC
Use resources in class, contextualizes them for the students (e.g. by pointing out their source and potential bias.)	4.20	VHC
Grand Mean	4.25	VHC

Legend:

Scale	Mean Range	Descriptive Equivalent
5	4.20-5.00	Very Highly Competent (VHC)
4	3.40-4.19	Highly Competent (HC)
3	2.60-3.39	Moderately Competent (MC)
2	1.80-2.59	Fairly Competent (FC)
1	1.00-1.79	Least Competent (LC)

The level of digital teaching competence along teaching and learning is presented in table 4. It registers a grand mean of 4.25, with a description of very highly competent. This implies that most teacher respondents were competent in integrating digital technology and tools in the teaching and learning process. The table shows that teachers are highly competent in using digital technologies in class, ensuring safety and value for both themselves and their students. However, achieving 100% participation in collaborative learning is challenging due to factors such as lack of access to devices, poor internet connectivity, and the teacher's technical knowledge, which affects the acquisition of knowledge. The integration of digital devices and resources in the teaching and learning process enhances the effectiveness of teaching interventions. Digital teaching also enhances and fosters learner collaboration and knowledge creation. Digital technologies used in teaching also allow learners to have a self-regulated learning that allows them to plan their own learning pace. Teachers must implement the use of digital technologies into collaborative learning, and allow the learners manipulate technologies, provided that the safety and privacy of the learners and the teacher is not compromised.

The level of digital teaching competence of teachers along assessment of learners can be seen on table 5. With the grand mean of 4.17 and a description of highly competent, it is lucid that some of the teacher respondents are competent in using digital tools and technologies in assessing learners' progress.

The result reveals that teachers are highly competent in using digital assessment formats to monitor student progress, including platforms like Google forms and Quizizz. However, analyzing all available data and designing valid and reliable digital assessments is challenging due to limited device access and the need for reliable materials. This affects the analysis of data, timely feedback, and support provided to learners, despite the pandemic. Despite these challenges, some teachers continue to use digital assessment formats. This implies that teachers use digital technologies to enhance formative and summative assessment and use digital assessment tools to monitor the learning process and obtain information on learners' progress. There is a need to integrate digital technologies into traditional assessment strategies and to use a range of e-assessment software, tools and approaches, for formative assessment, both in the classroom and for learners to use after school.

Table 5

Level of Competence along Assessment of Learning

Indicative Statement	Mean	DR
Use digital assessment formats to monitor student progress.	4.40	VHC
Analyze all data available to timely identify students who need additional support.	4.03	HC
Design digital assessments which are valid and reliable.	4.03	HC
Use the data analysis tools provided by the digital environments use to monitor and visualize activity.	4.18	HC
Use the data generated by digital technologies to reflect on which teaching strategies work well for which kind of learners and adapt my teaching strategies accordingly.	4.20	VHC
Grand Mean	4.17	HC

Legend:

Scale	Mean Range	Descriptive Equivalent
5	4.20-5.00	Very Highly Competent (VHC)
4	3.40-4.19	Highly Competent (HC)
3	2.60-3.39	Moderately Competent (MC)
2	1.80-2.59	Fairly Competent (FC)
1	1.00-1.79	Least Competent (LC)

Table 6

Level of Digital Teaching Competence along Empowering Learners

Indicative Statement	Mean	DR
Consider and addresses potential digital problems when creating digital assignment for students (E.g. equal access to digital devices and resources; interoperability and conversion problems; lack of digital skills)	4.31	VHC
Use digital technologies to offer students personalized learning opportunities. (e.g. gives different students different digital tasks to address individual learning needs, preferences, and interests)	4.12	HC
Use digital technologies for students to actively participate in class	4.31	VHC
Put learners' active use of digital technologies at the center of the instructional process.	4.12	HC
Reflect on how effective the teaching strategies employed are in increasing learner engagement and active learning.	4.29	VHC
Grand Mean	4.23	VHC

Legend:

Scale	Mean Range	Descriptive Equivalent
5	4.20-5.00	Very Highly Competent (VHC)
4	3.40-4.19	Highly Competent (HC)
3	2.60-3.39	Moderately Competent (MC)
2	1.80-2.59	Fairly Competent (FC)
1	1.00-1.79	Least Competent (LC)

Table 6 shows the level of digital teaching competence along empowering learners. It has a registered grand mean of 4.23, with a description of very highly competent. This indicates that most teacher respondents were competent in empowering learners through digital teaching. Teachers are concerned about the accessibility and inclusivity of digital materials for students. They understand the importance of equal access to digital technologies and how social and economic conditions impact technology usage. Some teachers re-design resources and collaborate with learners and parents to address specific needs. However, some teachers are uncertain about the potential of digital technologies in personalized learning, possibly due to traditional teaching methods and technical know-how. They also fear that disadvantaged learners may struggle to participate and keep up with others, affecting their ability to address learners' needs.The findings imply that teachers must provide equitable access to appropriate digital technologies and resources and use digital technologies to address learners' diverse needs. In

addition, digital teaching should open learning to new, real-world contexts, which involve learners themselves in hands-on activities, scientific investigation or complex problem solving, or in other ways, increase learners' active involvement in complex subject matters.

The level of digital teaching competence of teachers along facilitating learners' digital competence can be seen on table 7. With a registered grand mean of 4.20 and a description of very highly competent, this means that most teacher respondents were competent in facilitating learners' digital competence through digital teaching. Teachers are increasingly using digital technologies to promote authentic information and media literacy among students. They are teaching students to assess information reliability, identify misinformation, and create digital content for assignments. This helps students protect themselves from fake news and scams. Some teachers are already incorporating digital technologies into learning activities, enabling learners to understand risks and threats in digital environments. Digital means allow learners to express themselves safely, especially online. The findings also imply that teachers should already incorporate digital technologies and platforms with learning activities, like assignment and performance tasks. Teachers should also enable learners to understand risks and threats in digital environments and help them identify credible information and false ones. Through digital means, teachers allow learners to express themselves, provided that they behave safely and accordingly, especially when having it online.

Table 7
Level of Digital Teaching Competence along Facilitating Learners' Digital Competence

Indicative Statement	Mean	DR
Teach students how to assess the reliability of information and to identify misinformation and bias	4.27	VHC
Set up assignment, which require students to use digital means to communicate and collaborate with each other or with an outside audience.	4.16	HC
Set up assignments, which require students to create digital content (e.g. videos, audios, photos, digital presentations, blogs, wikis)	4.27	VHC
Teach students how to behave safely and responsibly online.	4.25	VHC
Encourage students to use digital technologies creatively to solve concrete problems. (e.g. to overcome obstacles or challenges emerging in the learning process)	4.07	HC
Grand Mean	4.20	VHC

Legend:

Scale	Mean Range	Descriptive Equivalent
5	4.20-5.00	Very Highly Competent (VHC)
4	3.40-4.19	Highly Competent (HC)
3	2.60-3.39	Moderately Competent (MC)
2	1.80-2.59	Fairly Competent (FC)
1	1.00-1.79	Least Competent (LC)

Table 8
Summary of the Level of Digital Teaching Competence

Area of Competence	Mean	DR
Professional Engagement	4.30	VHC
Digital Resources	4.35	VHC
Teaching and Learning	4.25	VHC
Assessment of Learning	4.17	HC
Empowering Learners	4.23	VHC
Facilitating Learners Digital Competence	4.20	VHC
Grand Mean	4.25	VHC

Legend:

Scale	Mean Range	Descriptive Equivalent
5	4.20-5.00	Very Highly Competent (VHC)
4	3.40-4.19	Highly Competent (HC)
3	2.60-3.39	Moderately Competent (MC)
2	1.80-2.59	Fairly Competent (FC)
1	1.00-1.79	Least Competent (LC)

Table 8 shows the summary of the level of digital teaching competence of teachers in the public elementary schools of Sta. Cruz District. It is evidenced by the grand mean of 4.25 with a description of very highly competent. This means that most teacher respondents were competent in the different areas of digital teaching. Notably, teachers are using digital resources to promote a learner-centered environment, integrating technology with traditional methods. However, the lowest mean for assessment of learning was 4.17, indicating some teachers are

not using digital assessment formats due to lack of expertise, availability of digital tools, and internet connection, which can hinder students' ability to cope with technology-based tasks. It is important for educators to consider the different areas of digital teaching. It is not enough to consider just one area of competence, but to be knowledgeable and skilled to all the areas. To be competent, teachers are required to attend various trainings and seminars for professional development and acquisition of innovative ideas for digital teaching. The findings also imply that teachers must comprehensively assess and reflect on their digital competence so that they can enhance their pedagogical strategies to address learners' needs.

Problems and Objectives based on the identified weaknesses on the digital teaching competence of teachers.
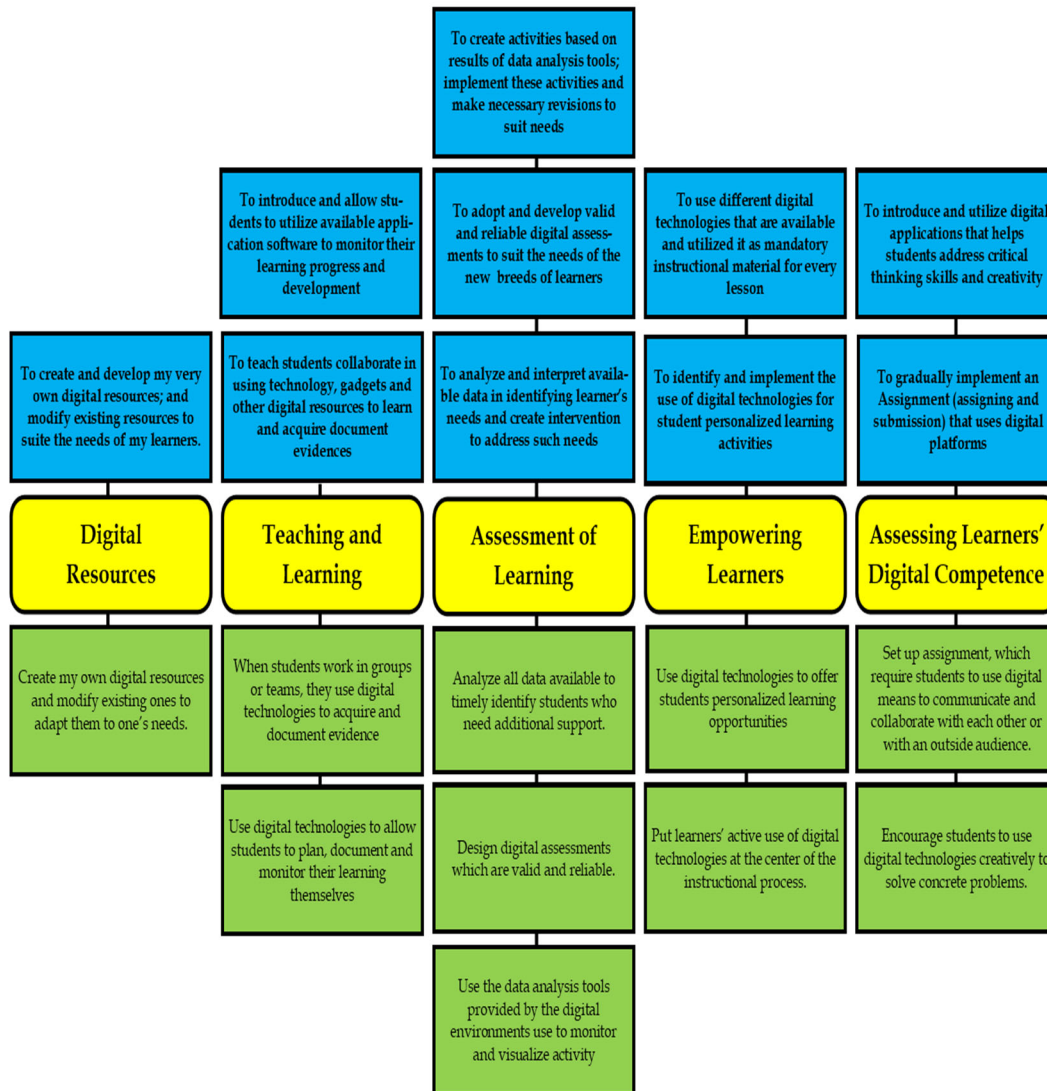

Figure 2. Problem Tree and Objective Tree

Figure 2 presents the problem tree and objective tree. The problem tree is a graphic tool helping to structure hierarchically problems identified (the negative situation), clarifying their cause effect relationship.

In the problem tree, the identified weaknesses were included, which were reformulated to become positive situations. These positive situations were written on the objective tree. The objective tree is the positive interface of the problem tree, hierarchically organizing the corresponding objectives (positive situation). The problem and objective trees are critical in the design (identification and formulation) phase. They are often used as a starting point to develop the intervention logic in the Logical Framework Analysis, also called Log Frame Analysis, which

became the basis in the development of the localized output of the study.

To further analyze the identified strengths and weaknesses to come up with the desired output, a Logical Frame Analysis is presented.

Table 9
Logical Framework Analysis on the problems and objectives of the level of digital competence

DIGITAL RESOURCES	Project Summary	Indicators	Means of Verification	Assumptions
Goal	Enhanced digital learning experiences.	-Set of new digital resources created and modified by teachers	-Resource inventory records -Modification logs	-Learners are open to using digital resources created or modified by teachers. -Teachers share digital resources
Outcome	Improved productivity through efficient utilization of customized digital resources	Learner engagement metrics (e.g., time spent on resources, participation rates)	Performance assessment results	-Teachers address the specific needs of learners through customized digital resources -Adequate time is available for resource development and modification.
Outputs	-Set of newly created digital resources. -A collection of modified existing resources. -Improved learner engagement and performance metrics.	-Set of new digital resources created -Set of existing resources modified.	-Resource inventory records -Modification logs -Learner performance improvement (e.g., test scores, assignment grades).	Learners are open to using digital resources created or modified by teachers. Teachers create a digital resource bank which is shareable.
Activities	-Assess learners' needs and preferences. -Identify and review existing resources.	-Number of learners assessed - Number of existing digital resources	-List of learners assessed -Resource inventory records -Digital resource data bank	-Learners' engagement and participation is increased.

ASSESSMENT OF LEARNERS	Project Summary	Indicators	Means of Verification	Assumptions
Goal	Enhanced outcomes through quality digital assessment	-Number of students who needed additional support - Validity and reliability of digital assessments.	-Performance assessment have an increased result.	-Learner data is accurate and comprehensive -Learners are receptive to digital assessments and support.
Outcome	Familiarity with utilization of digital assessments schemes	-Number of students who needed additional support	Participation of learners in interactive and adaptive assessments is increased.	-Learners' specific needs are identified and assessed.
Outputs	Improved performances in different subject areas	-Set of digital assessment tools	-Documentation on the use of digital assessment tools.	-Teachers use digital tools to analyze student data.
Activities	-Collect and analyze student data. -Develop and validate digital assessments. -Monitor student activity and provide timely support	-Number of students who needed additional support -Set of digital assessment tools -Feedback form	- List of specific needs of learners. - Performance assessment results of learners	-Teachers use digital tools to analyze student data -Learners are receptive to digital assessments and support.

EMPOWERING LEARNERS	Project Summary	Indicators	Means of Verification	Assumptions
Goal	Improved Digital Proficiency	-Set of personalized digital learning plans developed.	-Performance-based assessment (e.g. project-based evaluations)	Learners are empowered in using digital technology.
Outcome	Digital proficiency in different areas of technology utilization is manifested	- Enhancement in student learning outcomes (e.g., grades, test scores	-Multimedia projects of learners (e.g. short vlogs, videos, clips, presentations)	Learners become proficient in using digital tools.

| Outputs | Increase digital proficiency is manifested | - Enhancement in student learning outcomes (e.g., grades, test scores | -Practical applications and real-world tasks done by learners | Learners engaged with personalized learning experiences. |
| Activities | -Assess individual student learning needs and preferences.
 -Develop and implement personalized digital learning plans.
 -Monitor and evaluate student progress and outcomes. | -Number of learners with specific needs and preferences

 -Set of personalized digital learning plans | -Performance assessment results

 -Digital learning plan records.

 -Digital proficiency assessments. | -Learners are engaged with personalized learning experiences.

 - Learners have access to necessary digital devices and internet. |

ASSESSING LEARNERS' DIGITAL COMPETENCE	Project Summary	Indicators	Means of Verification	Assumptions
Goal	Improved digital communication and collaboration skills.	Quality and impact of student projects.	-Skill assessment results -Project reports and documentation.	Students develop proficiency in using digital tools for communication and collaboration.
Outcome	Increased teamwork, engagement, and real-world interaction skills of learners.	Number of improved learners in digital communication and collaboration	-Peer evaluation results -Class Presentation and demonstration of learners using digital tools	Learners collaborate with each other using digital tools.
Outputs	Enhanced learners' creativity and problem-solving skills.	90%-100% of the learners are enhanced in terms of creativity and problem solving-skills using digital collaborative tools.	-Digital-collaborative projects of learners -Anecdotal records	Students develop innovative solutions to concrete problems using digital tools.
Activities	-Design project-based learning activities focused on real-world issues.	-Set of project-based learning activities.	-Collaborative digital resources	Teachers assess learners' digital competence
	-Facilitate the use of digital tools for project collaboration. -Monitor and evaluate student progress and project outcomes.		Project reports and documentation Assessment Result	Teachers and learners use collaborative digital tools to enhance learning experience

LOCALIZED FRAMEWORK ON DIGITAL TEACHING COMPETENCE FOR LAC SESSIONS

Rationale. Digital technologies became an essential tool for teachers in designing innovative solutions to real-world problems and have consequently increased student motivation. Since the Department of Education (DepEd) has been focusing on the integration of educational technology into the teaching-learning process, there were programs and policies introduced that further demonstrate the importance given to technology and digital-related capabilities, with an emphasis on preparing teachers to effectively incorporate technology into their classrooms. For instance, the Digital Rise Program that was anchored to the infrastructure, software, and capacity building of learners and teachers in technology which includes DepEd Computerization Program (DCP) and the DepEd Learning Management System (DLMS) where teachers can access teaching/learning materials and attend webinars for their continuous professional growth and development of their digital teaching competence. Since the technological advancements in teaching have transformed the practices and traditional methodologies, teachers need to enhance their digital teaching competence, which is beneficial not only to themselves, but most importantly to the learners.

The Localized Framework on Digital Teaching Competence is anchored on the result of the research work from the teachers of the public elementary schools in Sta. Cruz District, Division of Ilocos Sur. The focus of this study is to determine the level of digital teaching competence of the teachers in the public elementary schools of

Sta. Cruz District to come up with a localized framework on digital teaching competence which can be used in LAC Sessions.

Objectives. The Localized Framework on Digital Teaching Competence aims to provide a structured approach to integrating technology into teaching and facilitating learning which can be used in LAC Sessions.

Specifically, it aims to fulfill the following objectives:

➢ To identify the digital teaching competence of teachers anchored in the Philippine Professional Standards for Teachers (PPST).

➢ To equip teachers with knowledge and strategies needed to adapt to the rapid advancement of digital technologies in education.

➢ To identify the indicators needed to enhance the digital teaching competence of teachers.

➢ To enhance teachers' digital teaching competence in terms of using digital technologies for their professional development.

➢ To enable teachers to identify and address learning gaps.

➢ To encourage teachers and learners use digital technologies and other innovative and interactive strategies to boost learning.
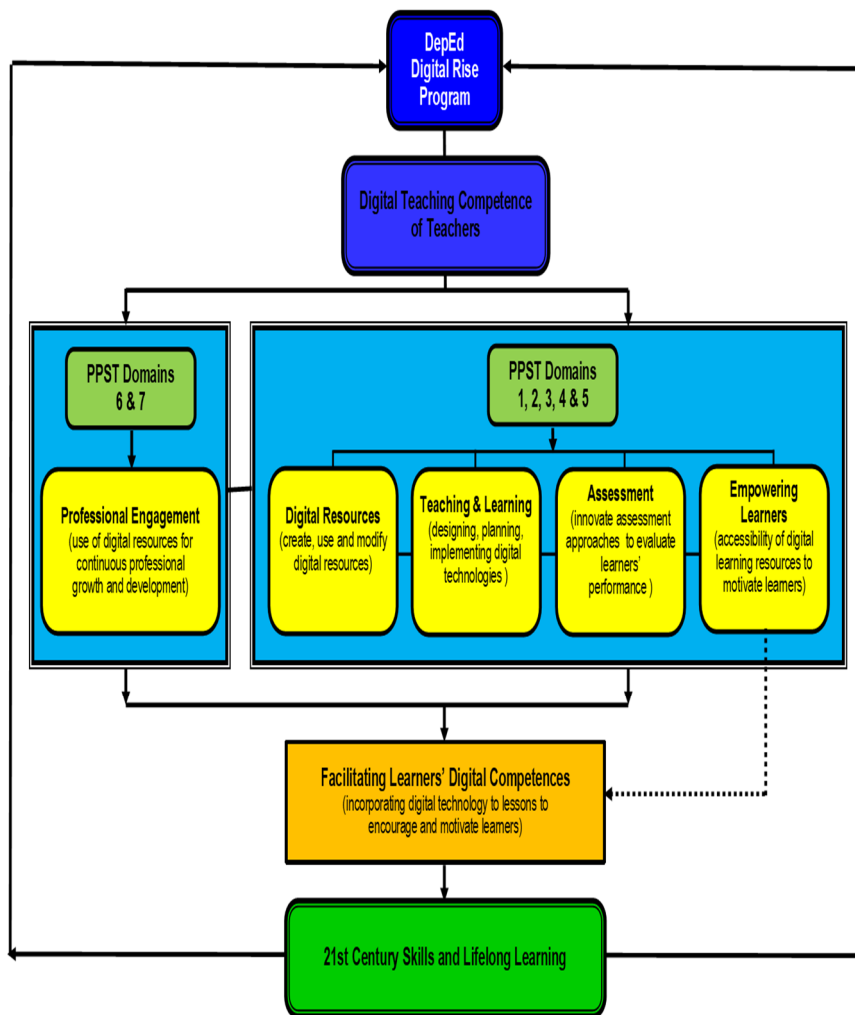

Figure 3. Localized Training Framework on Digital Teaching Competence

Level of Acceptability of the Localized Framework on Digital Teaching Competence

Table 10
Level of Acceptability of the Localized Framework on Digital Teaching Competence

Indicator	MEAN	DR
Objectives		
The objectives are clear.	3.9	HA
The objectives are S.M.A.R.T.	3.9	HA
The objectives are comprehensive.	4	HA
The objectives respond to identified and pressing needs.	4	HA
The objectives are based on the abilities of the recipients.	3.9	HA
Sub Mean	3.94	HA
Content		
The contents are needs-based.	4	HA
The contents are arranged logically.	4	HA
The contents are appropriate and relevant.	4	HA
The contents can improve the delivery of quality instruction and training.	4	HA
The contents/activities are congruent to the objectives.	4	HA
Sub Mean	4	HA
Usefulness		
The output can be used at any particular time.	3.9	HA
The output is easy to use and implement.	3.9	HA
The output addresses the improvement of functions of concerned people.	4	HA
The output defines the key concerns and objectives.	4	HA
The output can be used by the concerned individuals/end-users.	4	HA
Sub Mean	3.96	HA
Grand Mean	3.96	HA

Legend

Scale	Mean Range	Descriptive Equivalent
4	3.25-4.00	Highly Acceptable
3	2.50-3.24	Much Acceptable
2	1.75-2.49	Moderately Acceptable
1	1.00-1.74	Low Acceptability

Table 10 shows the level of acceptability of the localized framework on digital teaching competence. The results presented in Table 10 indicate a high level of acceptability for the localized framework on digital teaching competence, as evidenced by the grand mean of 3.96. Since the developed localized framework satisfactorily met the standards and expectations of the experts, it is therefore appropriate and ready to be utilized by the teachers in Sta. Cruz District, Schools Division of Ilocos Sur.

4. Conclusions

Based on the salient findings, the researcher arrived at the following conclusions:

➢ Most teachers use digital resources and integrate digital technologies in the teaching and learning process, as well as for their professional development.

➢ Although teachers use and incorporate digital technologies and resources, they still need to enhance their digital teaching competence in terms of modifying and creating digital resources, assessment, and facilitating learning.

➢ Frequent use, access, and integration of digital technologies and resources can enhance teachers' digital teaching competence and increase learner motivation.

➢ The localized framework on digital teaching competence is highly acceptable and can be used as a tool in identifying the area of digital teaching that is needed to be improved.

Recommendations - In the light of the above findings and conclusions drawn, the following recommendations are made:

> ➤ Teachers may be given more training in ICT to further equip them with the knowledge and abilities required to use ICT equipment and lets them be updated on the current trends in digital teaching that can enhance learning empowerment and continuous professional development.

> ➤ The Department of Education may provide schools enough computer units and digital tools for the learners to use and a stable and accessible internet connection inside the school premises which can be used by teachers and learners.

> ➤ Administrators may also encourage and motivate themselves to pursue digital learning development to provide relevant technical assistance to teachers.

> ➤ The developed localized framework may be used as basis for enhancing the digital teaching competence of teachers.

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