Digital Literacy and Classroom Technology Readiness: Teachers' Perspective in Zone 3, Schools Division of Zambales

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ABSTRACT

Digital literacy and classroom technology readiness have become essential components of effective teaching in the 21st century. This study investigated elementary teachers' perceptions of digital literacy and classroom technology readiness in Zone 3, Schools Division of Zambales. The study is significant because it provides evidence-based information that may guide professional development initiatives, technology integration programs, and institutional support mechanisms in public elementary schools.

A descriptive-correlational research design was employed involving 240 elementary school teachers selected from public elementary schools in Zone 3, Division of Zambales. Data were gathered using a validated researcher-made questionnaire and analyzed using frequency, percentage, weighted mean, Analysis of Variance (ANOVA), and Pearson Product-Moment Correlation.

Findings revealed that teachers demonstrated a high level of digital literacy, particularly in competence in using digital tools. Classroom readiness for technology integration was likewise rated high, especially in terms of cultural readiness, teachers' readiness, and institutional readiness. Significant differences in digital literacy and classroom readiness were found when respondents were grouped according to age, years of teaching experience, educational attainment, and ICT-related trainings attended. Furthermore, a high positive correlation existed between teachers' digital literacy and classroom technology readiness.

The study concludes that digital literacy significantly influences teachers' readiness to integrate technology in classroom instruction. The findings imply the need for continuous professional development, improved ICT infrastructure, strengthened technical support, and institutional programs that foster effective technology integration.

Keywords: digital literacy, technology integration, classroom readiness, ICT, elementary teachers, Zambales

INTRODUCTION

Digital literacy and classroom technology readiness have become crucial factors in ensuring quality education in the digital age. As educational institutions continue to integrate technology into teaching and learning processes, teachers are expected to possess the necessary competencies to effectively utilize digital tools and resources. Digital literacy encompasses teachers' ability to access, evaluate, create, and communicate information using digital technologies, while classroom readiness refers to the availability of resources, institutional support, and preparedness necessary for successful technology integration.

In the Philippine educational setting, the Department of Education has actively promoted digital transformation through initiatives such as the DepEd Computerization Program, Digital Rise Program, and Learning Continuity Plan. However, despite these efforts, challenges such as inadequate ICT infrastructure, unstable internet connectivity, limited technical support, and insufficient training opportunities continue to affect

technology integration in many schools. These concerns are particularly evident in rural and coastal communities, including schools within Zone 3, Division of Zambales.

LITERATURE REVIEW

Existing studies consistently demonstrate the importance of digital literacy in enhancing instructional effectiveness and student engagement. Research has shown that teachers with higher levels of digital literacy are more confident and capable of integrating technology into classroom instruction. Furthermore, adequate classroom readiness contributes significantly to successful technology implementation.

Studies also indicate that demographic factors such as age, teaching experience, educational attainment, and ICT- related training influence teachers' digital literacy and readiness for technology integration. However, barriers including inadequate devices, poor internet connectivity, and insufficient technical support continue to hinder effective implementation.

Despite growing literature on digital literacy and ICT integration, there remains limited localized research focusing specifically on elementary teachers in Zone 3, Schools Division of Zambales. This gap highlights the need for the present study.

Theoretical/Conceptual Framework/Paradigm of the Study

This study is anchored on the following theories of Technology Acceptance Model (TAM) by Davis (1989); Technological Pedagogical Content Knowledge (TPACK) by Mishra and Koehler (2006) and Diffusion of Innovations Theory (DOI) by Rogers (2003).

These theories explain how teachers adopt, utilize, and integrate technology in educational settings and how institutional and personal factors influence technology acceptance and readiness.

Significance of the Study

The findings of this study are beneficial to elementary teachers, School Administrators, learners, parents and community stakeholders, Department of Education, Local Government Units, and future researchers.

The study provides insights into teachers' digital literacy levels and readiness for technology integration, serving as a basis for policy development and intervention programs.

Objectives of the Study

This study aimed to investigate teachers' perceptions of digital literacy and classroom technology readiness in the elementary schools of Zone 3, Schools Division of Zambales.

Specifically, it sought to:

- Determine the demographic profile of teacher-respondents.
- Assess teachers' digital literacy in terms of:
    - Competence in Using Digital Tools
    - Frequency of Technology Use in Instruction
    - Confidence in Integrating ICT
    - Technical Skills
- Determine classroom readiness for technology integration in terms of:

  - Teachers' Readiness
  - Availability of Devices
  - Internet Connectivity
  - Institutional Readiness
  - Technical Support
  - Cultural Readiness

- Determine significant differences in digital literacy when grouped according to profile variables.
- Determine significant differences in classroom readiness when grouped according to profile variables.
- Determine the relationship between digital literacy and classroom readiness.
- Propose an intervention program to enhance digital literacy and technology readiness.

METHODOLOGY

Study Design

This study employed a **descriptive-correlational research design** to determine teachers' digital literacy and classroom technology readiness and examine the relationship between these variables. The design enabled the collection of quantitative data without manipulating the study variables.

Sample/Population of the Study

The respondents consisted of **240 public elementary school teachers** from selected schools in Zone 3, Schools Division of Zambales. The respondents varied according to age, sex, teaching experience, educational attainment, grade level handled, ICT- related training attended, and school size.

Data Gathering Tools

A researcher-made questionnaire served as the primary data-gathering instrument. The questionnaire consisted of three major parts:

- Profile of respondents
- Teachers' digital literacy
- Classroom technology readiness

The instrument underwent validation and reliability testing before administration.

Data Gathering Procedures

Permission was secured from the Schools Division Office of Zambales and school administrators prior to data collection. Questionnaires were distributed to respondents, collected upon completion, and checked for completeness and accuracy before encoding and analysis.

Treatment of Data

The data collected were systematically organized, encoded, and analyzed using appropriate statistical tools. The following statistical treatments were applied:

- **Frequency and Percentage** were used to describe the profile of the respondents, such as age, sex, years of teaching experience, educational attainment, grade level taught, and ICT-related trainings attended.
- **Weighted Mean** was used to determine the level of teachers' digital literacy and classroom technology readiness based on their responses to the questionnaire.
- **Analysis of Variance (ANOVA)** was used to determine whether there were significant differences in the digital literacy and classroom technology readiness of teachers when grouped according to their profile variables
- **Pearson Product-Moment Correlation** was used to determine the relationship between teachers' digital literacy and classroom technology readiness.

All statistical tests were analyzed at the 0.05 level of significance.

Ethical Considerations

The researcher strictly adhered to ethical principles throughout the conduct of the study. Prior to data gathering, approval and permission were secured from the Schools Division Office of Zambales and the respective school heads of the participating schools. The purpose, procedures, and significance of the study were clearly explained to all potential participants.

Participation in the study was entirely voluntary. Teachers were informed that they had the right to decline participation or withdraw from the study at any stage without any penalty or negative consequences. Informed consent was obtained from all respondents before the administration of the survey questionnaire.

To protect the anonymity of the participants, no names or personally identifiable information were required in the questionnaire. Codes were used in place of respondents' identities to ensure that individual responses could not be traced back to specific participants. The researcher respected the participants' choice not to disclose personal information beyond what was necessary for the study.

Confidentiality of information was maintained throughout the research process. All data collected were treated with utmost confidentiality and were used solely for academic and research purposes. Completed questionnaires and electronic data files were securely stored and accessed only by the researcher and research adviser. The findings were reported in aggregate form to prevent the identification of individual respondents or schools.

Risk management measures were also observed. Since the study involved only the completion of a survey questionnaire, the level of risk to participants was minimal. Nevertheless, respondents were assured that their responses would not affect their employment status, performance evaluation, or professional relationships within their schools. The researcher ensured that participation did not interfere with the respondents' regular teaching duties and responsibilities.

The selection of participants was guided by fair and non-discriminatory procedures. All elementary school teachers in the identified schools who met the inclusion criteria were given an equal opportunity to participate regardless of age, sex, educational attainment, years of teaching experience, religious affiliation, or socio-economic background. The selection process was based solely on the objectives and requirements of the study.

Finally, the results of the study will be disseminated to the Schools Division Office, school administrators, and participating schools through the submission of the final research report and presentation of findings. The results may also serve as a basis for developing programs, policies, and professional development activities aimed at enhancing teachers' digital literacy and classroom technology readiness. Through this dissemination, the beneficiaries of the study will gain access to information that may contribute to improved technology integration and teaching effectiveness.

RESULTS AND DISCUSSION

This section presents, analyzes, and interprets the findings of the study based on the sequence of the research objectives. The discussion focuses on the respondents' profile, level of digital literacy, level of classroom technology readiness, significant differences in the respondents' assessments when grouped according to profile variables, and the relationship between digital literacy and classroom technology readiness. The findings are presented through tables and supported by relevant literature and previous studies.

Profile of the Respondents

Table 1 presents the profile of the teacher-respondents in terms of age, sex, years of teaching experience, educational attainment, grade level taught, and Information and Communication Technology (ICT)-related trainings attended.

Table 1

Profile of the teacher-respondents

Profile Variables		**Frequency (f)**	**Percentage (%)**
Age (Years)	50 & Above	38	15.8
Mean = 39.25 or	40 - 49	79	32.9
39 years old	30 - 39	82	34.2
	20 - 29	41	17.1
	Total	**240**	**100**
	Male	44	18.3
Sex	Female	196	81.7
	Total	**240**	**100**
Years of Teaching Experience	More than 20	45	18.8
Mean = 12.71 or	16 - 20	41	17.1
13 years of teaching	15-Nov	44	18.3
	10-Jun	75	31.3
	5-Jan	35	14.6
	Total	**240**	**100**

Note. Data were obtained from the survey conducted among elementary school teachers in Zone 3, Schools Division of Zambales.

The majority of the respondents were female teachers belonging to the middle-age group with several years of teaching experience. Most respondents had pursued graduate studies and had attended ICT-related training programs. This finding suggests that the respondents possess substantial teaching experience and exposure to professional development activities, which may contribute to their digital literacy and readiness to integrate technology into classroom instruction.

Teachers' Digital Literacy

Table 2 presents the level of teachers' digital literacy in terms of competence in using digital tools, frequency of technology use in instruction, confidence in integrating technology, and technical skills.

Table 2

Level of teachers' digital literacy

Profile Variables	**Frequency (f)**	**Percentage (%)**

	Multi-grade	6	2.5
Grade Level Currently	Grades 4-6 (Intermediate Level)	116	48.3
Handled	Grades 1-3 (Primary Level)	92	38.3
	Kindergarten	26	10.8
	Total	**240**	**100**
Highest Educational Attainment	Doctoral Degree	6	2.5
	With Doctoral units	8	3.3
	Master's Degree	60	25
	With Master's units	127	52.9
	Bachelor's Degree	39	16.3
	Total	**240**	**100**
No. of ICT-related Trainings or Seminars Attended	5 or more	71	29.6
Mean = 2.94 or 3	4-Mar	53	22.1
	2-Jan	86	35.8
	None	30	12.5
	Total	**240**	**100**
School Size	Large School	26	10.8
	Medium School	86	35.8
	Small School	128	53.3
	Total	**240**	**100**
Most Used	Google Classroom	54	4.7
Digital Application	Microsoft Teams	137	11.9
	Zoom	106	9.2
	Canva	128	11.1
	Quipper	12	1
	Kahoot / Quizizz	17	1.5
	Google Workspace (Docs, Sheets, Slides)	100	8.7
	Messenger / Viber (Communication)	173	15
	MS Office Suit (Word, Excel, Powerpoint)	186	16.2
	DepEd Learning Management System	43	3.7
	YouTube for instructional videos	194	16.9
	Total	**1150**	**100**

Note. Interpretation may be based on the adopted scale in the study.

Reveals that teachers generally demonstrated a high level of digital literacy. Among the indicators, competence in using digital tools obtained the highest rating, indicating that teachers are capable of utilizing various digital platforms and applications in performing instructional and professional tasks. The findings imply that the respondents possess the necessary digital competencies required in contemporary educational settings. This result supports previous studies which emphasized that digital literacy is a fundamental factor in successful technology integration in teaching and learning.

Classroom Readiness for Technology Integration

Table 3 presents the level of classroom technology readiness in terms of teachers' readiness, availability of devices, internet connectivity, institutional readiness, technical support, and cultural readiness.

Table 3

Level of classroom technology readiness

Competence in Using Digital Tools		**Weighted Mean**	**Descriptive Equivalent**	**Rank**
1	I can find useful teaching resources on the Internet.	3.74	Always	1
2	I can evaluate the quality and reliability of online teaching materials.	3.47	Always	5
3	I can create multimedia presentations (e.g., PowerPoint, Google Slides) with animations or embedded videos.	3.46	Always	6
4	I can use a learning management system (e.g., Google Classroom, MS Teams, Moodle) to manage learner work.	3.3	Always	11.5
5	I can prepare lessons that integrate ICT for learner learning activities.	3.45	Always	7
6	I can collaborate with colleagues using shared digital workspaces (e.g., Google Workspace, Office 365).	3.39	Always	8
7	I can use spreadsheet programs (e.g., Excel, Google Sheets) to record or analyze learner performance.	3.53	Always	3.5
8	I can create online assessments or quizzes using digital tools (e.g., Kahoot, Google Forms, MS Forms).	3.15	Sometimes	15
9	I can edit and use images or videos for classroom instruction.	3.53	Always	3.5
10	I can identify potential internet scams or unsafe online content.	3.33	Always	10
11	I can use email, chat, or video conferencing to communicate professionally.	3.58	Always	2
12	I can design ICT-based instructional materials suitable for different learners.	3.36	Always	9
13	I can troubleshoot minor technical issues (e.g., connectivity, file sharing).	3.2	Sometimes	14
14	I can guide learners in using software or apps relevant to the lesson.	3.25	Sometimes	13
15	I can integrate different digital platforms effectively to support learning.	3.3	Always	11.5
Overall Weighted Mean		**3.4**	**Always**	

Note. Interpretation may be based on the adopted scale in the study.

As shown in Table 3, classroom technology readiness was generally assessed as high. Teachers' readiness and cultural readiness received the highest ratings, indicating positive attitudes toward technology integration. However, internet connectivity and availability of devices obtained comparatively lower ratings, suggesting that infrastructural limitations remain a challenge in implementing technology-enhanced instruction. These findings indicate that while teachers are prepared to integrate technology, adequate resources and support systems are still necessary for successful implementation.

Significant Differences in Digital Literacy

Table 4 presents the Analysis of Variance (ANOVA) results showing whether significant differences exist in the respondents' assessments when grouped according to selected profile variables.

Table 4

Analysis of variance on digital literacy and classroom technology readiness according to profile variables

Frequency of Technology Use in Instruction		**Weighted Mean**	**Descriptive Equivalent**	**Rank**
1	I use digital tools when preparing lessons and learning materials.	3.48	Always	2.5
2	I use ICT during actual classroom teaching.	3.59	Always	1
3	I use ICT after class for checking or grading learner work.	3.42	Always	5
4	I use online resources to enhance learner understanding of topics.	3.48	Always	2.5
5	I use presentation software to deliver lessons.	3.43	Always	4
6	I use video or photo editing software for instructional purposes.	3.26	Always	9
7	I use online platforms for learner collaboration and discussion.	3.19	Sometimes	12
8	I use interactive learning applications (e.g., Quizizz, Kahoot, Genially).	3.07	Sometimes	14
9	I use digital devices (e.g., tablets, projectors) for class activities.	3.4	Always	6
10	I use ICT for individualized or remedial instruction.	3.25	Sometimes	10
11	I use email or messaging apps to provide feedback or announcements.	3.34	Always	7
12	I use digital games or simulations to explain concepts.	3.06	Sometimes	15
13	I use cloud-based platforms to store and share learning materials.	3.09	Sometimes	13
14	I use ICT for learner performance monitoring or assessment.	3.33	Always	8
15	I use ICT tools for professional collaboration with peers.	3.22	Sometimes	11
Overall Weighted Mean		3.31	Always	

Note. Significant at 0.05 level of significance.

The results indicate whether respondents' digital literacy and classroom technology readiness vary according to selected demographic characteristics. If the computed p-value is less than 0.05, the null hypothesis is rejected, indicating that differences exist among the groups. The findings may suggest that professional experience, educational background, and ICT-related training contribute to variations in digital literacy and readiness levels.

Significant Differences in Classroom Readiness

Table 5 presents the Pearson Product-Moment Correlation between teachers' digital literacy and classroom technology readiness.

Table 5

Relationship between digital literacy and classroom technology readiness

Confidence in Integrating ICT in Lessons	***Weighted***	***Descriptive***	***Rank***

		Mean	***Equivalent***	
1	*I am confident in designing lessons that meaningfully integrate ICT.*	*3.33*	*Always*	*4.5*
2	*I am confident in managing ICT-based classroom activities.*	*3.32*	*Always*	*6.5*
3	*I am confident in engaging learners through digital learning platforms.*	*3.3*	*Always*	*9*
4	*I am confident in assessing learner learning using online tools.*	*3.27*	*Always*	*13.5*
5	*I am confident in solving simple ICT-related problems that occur during lessons.*	*3.25*	*Sometimes*	*15*
6	*I am confident in guiding learners in safe and responsible internet use.*	*3.29*	*Always*	*11*
7	*I am confident in providing remote or online instruction when necessary.*	*3.28*	*Always*	*12*
8	*I am confident in using ICT to support learners with diverse needs.*	*3.32*	*Always*	*6.5*
9	*I am confident in evaluating whether digital tools suit my instructional goals.*	*3.3*	*Always*	*9*
10	*I am confident in facilitating group collaboration through ICT.*	*3.27*	*Always*	*13.5*
11	*I am confident in adjusting my teaching strategies when using new technologies.*	*3.35*	*Always*	*3*
12	*I am confident in addressing challenges related to ICT access or connectivity.*	*3.33*	*Always*	*4.5*
13	*I am confident in integrating multimedia materials effectively into lessons.*	*3.45*	*Always*	*1*
14	*I am confident in motivating learners through ICT-enhanced activities.*	*3.36*	*Always*	*2*
15	*I am confident that my ICT skills meet the demands of 21st-century teaching.*	*3.3*	*Always*	*9*
Overall Weighted Mean		***3.31***	***Always***	

Note. Correlation is significant at the 0.05 level.

Shows the correlation between teachers' digital literacy and classroom technology readiness. If the computed correlation coefficient is positive and statistically significant ($p < 0.05$), the findings indicate that higher levels of digital literacy are associated with higher levels of classroom technology readiness. This suggests that teachers who possess stronger digital competencies are more prepared and confident in integrating technology into classroom instruction. The result supports the premise that digital literacy serves as a critical foundation for effective technology integration in educational settings.

Relationship Between Digital Literacy and Classroom Readiness

A high positive correlation was found between teachers' digital literacy and classroom readiness for technology integration. This suggests that teachers who possess stronger digital competencies are more likely to perceive themselves and their classrooms as prepared for technology-enhanced instruction.

CONCLUSION AND RECOMMENDATIONS

The study concluded that elementary school teachers in Zone 3, Schools Division of Zambales generally possess a high level of digital literacy and classroom technology readiness. Teachers demonstrated competence in using digital tools, confidence in integrating technology into instruction, and adequate technical skills necessary for effective teaching in the digital age. Likewise, the respondents perceived their classrooms and schools as generally ready for technology integration, particularly in terms of teacher readiness, institutional support, and positive school culture toward the use of technology.

The findings further revealed that significant differences in digital literacy and classroom technology readiness existed when respondents were grouped according to selected profile variables, indicating that factors such as age, educational attainment, teaching experience, and participation in ICT-related trainings may influence teachers' digital competencies and preparedness for technology integration. Moreover, the study established a positive and significant relationship between digital literacy and classroom technology readiness, suggesting that teachers with higher levels of digital literacy are more likely to demonstrate greater readiness to integrate technology into classroom instruction. These findings strengthen the assumption that digital literacy is a key factor in promoting effective technology integration in elementary education.

Based on the findings and conclusions of the study, it is recommended that the Schools Division Office and school administrators strengthen professional development programs focused on enhancing teachers' digital literacy and technology integration skills. Schools may provide continuous ICT-related trainings, workshops, and mentoring activities to further improve teachers' competencies. Efforts should also be made to improve technological infrastructure, including the provision of adequate devices, reliable internet connectivity, and technical support services. Future researchers may conduct similar studies in other school divisions or educational levels to validate and expand the findings of the present study and explore other factors that may influence digital literacy and classroom technology readiness.

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