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Bridging the Digital Divide: Technological Readiness and Challenges of Retirable Teachers in Rosario, Agusan Del Sur Public Schools

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ABSTRACT

This quantitative descriptive-correlational study examined the technological readiness and challenges encountered by retirable teachers in public elementary schools in Rosario, Agusan del Sur. Fifty-two teachers aged 55 years and above were purposively selected. A validated structured questionnaire assessed technological readiness in terms of access to technology, technological skills, and attitude toward technology, as well as infrastructural, institutional, and personal challenges. Frequency counts, percentages, weighted means, and the Pearson Product-Moment Correlation Coefficient were used to analyze the data. The respondents demonstrated a high overall level of technological readiness (M = 3.65), with a high attitude toward technology (M = 4.18) and access to technology (M = 3.42), although technological skills remained moderate (M = 3.36). They also experienced a high overall level of challenges (M = 3.54), primarily infrastructural (M = 3.78) and institutional (M = 3.56), while personal challenges were moderate (M = 3.28). Technological readiness and challenges were significantly and negatively correlated (r = -0.412, p = .003), indicating that higher readiness was associated with fewer challenges. The findings emphasize that positive attitudes among senior teachers should be reinforced through age-responsive skills training, peer mentoring, strengthened institutional support, and improved ICT infrastructure to promote inclusive digital education in rural public schools.

Keywords: *technological readiness; retirable teachers; ICT challenges; digital divide; public schools; digital education*

INTRODUCTION

Digital technology has become an essential component of contemporary education. It shapes instructional delivery, communication, assessment, and teachers' professional responsibilities. Digital tools and online platforms can improve learner engagement and strengthen the efficiency of educational processes when teachers have the competence and resources needed to use them meaningfully (Akram et al., 2022; Granić, 2022). In the Philippines, the Department of Education has promoted information and communication technology (ICT) integration through initiatives such as the Digital Rise Program (Department of Education [DepEd], 2022).

The rapid shift to remote and technology-assisted learning during the COVID-19 pandemic accelerated the adoption of digital tools, but it also exposed unequal levels of teacher readiness (Trust & Whalen, 2022). These differences are especially relevant among senior and retirable teachers. Many teachers aged 55 years and above began their careers before digital technologies became central to classroom practice. Their professional experience remains a major asset, yet limited prior exposure to ICT, uneven access to training, and anxiety when using new platforms may constrain their participation in technology-driven education (Estrella, 2022; Fahmiyah et al., 2023).

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Technological readiness is not determined by individual competence alone. Access to equipment, reliable internet connectivity, technical assistance, and supportive institutional leadership also shape teachers' ability to use digital tools. Rural public schools often experience unstable internet connections, insufficient ICT resources, and limited technical support. These conditions intensify the digital divide and can restrict even motivated teachers from integrating technology effectively (Espinosa et al., 2023; Lin et al., 2023; UNICEF Philippines, 2023).

Rosario, Agusan del Sur provides an important setting for examining these concerns because public schools operate across rural communities with varying access to digital infrastructure. Understanding the readiness and challenges of teachers nearing retirement can guide age-responsive professional development and more equitable ICT support. This study determined the profile of retirable teachers, assessed their technological readiness and challenges, and examined whether readiness was significantly related to the challenges they encountered.

Literature Review

Technological Readiness and Teacher Adoption of ICT

Technological readiness refers to teachers' preparedness to use digital tools in educational settings. It includes access to technology, technological skills, and attitudes toward the use of ICT. Teachers who perceive digital tools as useful and manageable are more likely to adopt technology and use it for instruction (Ibrahim & Shiring, 2022; Teo, 2022). The Technology Acceptance Model explains this pattern through perceived usefulness and perceived ease of use, which shape attitudes, intentions, and actual use (Davis, 1989).

Positive attitudes are important but do not automatically ensure effective integration. Teachers also need practical skills, access to equipment, and opportunities to apply technology in authentic teaching contexts. Reviews of educational technology adoption emphasize that teacher readiness is multidimensional and depends on the interaction of personal competence and contextual support (Akram et al., 2022; Granić, 2022).

Digital Divide in Rural Education

The digital divide involves inequalities in access, skills, and meaningful use of digital resources. Rural schools are particularly vulnerable because unreliable internet connectivity, limited devices, and insufficient technical assistance can hinder technology-supported teaching. Lin et al. (2023) found that rural-urban disparities influence teachers' digital competence. In the Philippine context, reports have similarly emphasized uneven ICT infrastructure and persistent access limitations in underserved communities (Espinosa et al., 2023; UNICEF Philippines, 2023).

Retirable Teachers and Age-Responsive Support

Senior teachers may experience particular difficulties when educational technologies change rapidly. However, these difficulties should not be interpreted as resistance. Older educators can develop confidence and competence when training is relevant, practical, paced appropriately, and supported by accessible resources. Estrella (2022) documented the struggles of senior teachers when using technology, while Fahmiyah et al. (2023) showed that age differences can influence technology adoption. Knowles et al. (2015) emphasized that adult learning is strengthened when new knowledge is relevant to professional experience and immediately applicable to real tasks.

Institutional Support for Inclusive Digital Education

Technology integration requires institutional conditions that enable teachers to practice and sustain digital skills. School leaders can support teachers through continuous professional development, mentoring, technical assistance, and equitable access to equipment. Professional development should move beyond one-time seminars and provide hands-on learning that responds to specific classroom needs. This is especially important for teachers nearing retirement, whose extensive pedagogical experience can remain highly valuable when combined with appropriate digital support.

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METHODS

Research Design

The study employed a quantitative descriptive-correlational research design. The descriptive component determined the respondents' profile, level of technological readiness, and extent of challenges encountered. The correlational component examined the relationship between technological readiness and challenges without manipulating the variables.

Research Locale

The study was conducted in public elementary schools in Rosario, Agusan del Sur, a rural municipality in the Caraga Region of the Philippines. The research locale included schools with varying levels of access to ICT resources and internet connectivity, making it appropriate for examining technological readiness and the challenges faced by teachers nearing retirement.

Participants and Sampling Technique

The respondents were 52 retirable public elementary school teachers. Purposive sampling was used to include teachers who were 55 years of age or older and who remained actively engaged in teaching during School Year 2024-2025. The selection criteria focused the study on educators approaching mandatory retirement who may have distinct experiences in adapting to digital technologies.

Research Instrument

A validated structured survey questionnaire served as the primary data-gathering instrument. The first section gathered demographic information, including age, sex, years of service, educational attainment, and internet access at school. The second section assessed technological readiness in terms of access to technology, technological skills, and attitude toward technology. The third section measured the extent of infrastructural, institutional, and personal challenges. Responses were interpreted using a five-point scale: 4.21-5.00, very high; 3.41-4.20, high; 2.61-3.40, moderate; 1.81-2.60, low; and 1.00-1.80, very low.

Data Gathering Procedure

The researcher secured the necessary authorization before administering the questionnaires. Respondents were informed of the purpose of the study, the voluntary nature of participation, and the confidentiality of their responses. The questionnaires were administered directly, and clarification was provided when needed. Completed instruments were collected, checked, coded, and organized for statistical analysis.

Data Analysis

Frequency counts and percentages described the profile of the respondents. Weighted means determined the level of technological readiness and the extent of challenges encountered. The Pearson Product-Moment Correlation Coefficient tested the relationship between technological readiness and challenges at the .05 level of significance.

Ethical Considerations

Participation was voluntary, and informed consent was obtained before data collection. Respondents were assured that their identities and individual responses would remain confidential and that the data would be used only for academic and research purposes.

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RESULTS AND DISCUSSION

Profile of the Respondents

Most respondents were aged 55-59 years (59.6%), female (75.0%), and had served for more than 25 years (73.1%). Most had completed master's units or earned a master's degree (73.1%). Internet access at school was commonly weak (40.4%) or moderate (36.5%). The profile shows a professionally experienced and academically qualified group working in settings where connectivity remained uneven.

Table 1. *Profile of Respondents (n = 52)*

Variable	Category	Frequency	Percentage
Age	55-59 years	31	59.6
	60-64 years	17	32.7
	65 and above	4	7.7
Sex	Female	39	75.0
	Male	13	25.0
Years in Service	20-25 years	14	26.9
	26-30 years	21	40.4
	31 and above	17	32.7
Highest Educational Attainment	Bachelor's degree	12	23.1
	Master's units	20	38.5
	Master's degree	18	34.6
	Doctorate units/degree	2	3.8
Internet Access at School	Strong	9	17.3
	Moderate	19	36.5
	Weak	21	40.4
	None	3	5.8

Technological Readiness of Retirable Teachers

The respondents demonstrated a high overall level of technological readiness (M = 3.65). Attitude toward technology received the highest mean (M = 4.18), indicating that teachers generally recognized the value of digital tools and were willing to engage with them. Access to technology was also high (M = 3.42). However, technological skills were moderate (M = 3.36), revealing a gap between willingness and practical proficiency. The pattern supports the Technology Acceptance Model: favorable attitudes can encourage adoption, but teachers still require opportunities to strengthen their competence through guided and relevant practice (Davis, 1989; Teo, 2022).

Table 2. *Level of Technological Readiness*

Indicator	Weighted Mean	Interpretation
Access to technology	3.42	High
Technological skills	3.36	Moderate
Attitude toward technology	4.18	High
Overall weighted mean	3.65	High

Challenges Encountered by Retirable Teachers

The respondents experienced a high overall level of challenges (M = 3.54). Infrastructural challenges ranked first (M = 3.78), followed by institutional challenges (M = 3.56). Personal challenges were moderate (M = 3.28). These results indicate that external constraints, including internet connectivity, ICT resources, and institutional support, were more prominent than individual reluctance. The findings are consistent with research showing that rural schools encounter structural barriers that limit the meaningful use of educational technology (Espinosa et al., 2023; Lin et al., 2023).

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Table 3. *Extent of Challenges Encountered*

Indicator	Weighted Mean	Interpretation
Infrastructural challenges	3.78	High
Institutional challenges	3.56	High
Personal challenges	3.28	Moderate
Overall weighted mean	3.54	High

Relationship Between Technological Readiness and Challenges

Technological readiness was significantly and negatively related to the challenges encountered by retirable teachers ($r = -0.412$, $p = .003$). The result indicates that teachers with higher readiness tended to experience fewer difficulties in integrating technology. The moderate strength of the relationship also shows that readiness alone cannot eliminate barriers. Improvements in individual capacity should be accompanied by stronger infrastructure and institutional support. The null hypothesis was rejected.

Table 4. *Correlation Between Technological Readiness and Challenges Encountered*

Variables	Pearson r	p-value	Interpretation	Decision
Technological readiness and challenges encountered	-0.412	.003	Significant negative relationship	Reject H0

Note. Significant at $p < .05$.

Proposed Support Priorities for Retirable Teachers

The findings support an integrated response that combines competency development with systemic improvement. The following priorities translate the results into practical actions for schools and education leaders.

Table 5. *Proposed Support Priorities for Inclusive Digital Education*

Priority Area	Recommended Action	Lead Participants	Expected Contribution
Age-responsive ICT training	Conduct paced, hands-on sessions on basic digital tools, online platforms, file management, and technology-supported instruction.	Retirable teachers; ICT coordinators	Improved practical competence and confidence
Peer mentoring	Pair senior teachers with digitally proficient colleagues for coaching and classroom-based assistance.	School heads; mentor teachers	Sustained support and collaborative learning
Infrastructure improvement	Prioritize reliable connectivity, functional devices, maintenance, and accessible ICT facilities.	DepEd; school administrators	Reduced infrastructural barriers
Institutional support	Provide technical assistance, protected training time, and recognition for teachers completing digital-skills development.	School administrators	Stronger participation and reduced anxiety
Monitoring and evaluation	Periodically assess readiness, support needs, and the usefulness of ICT interventions.	School heads; ICT coordinators	Evidence-based improvement of digital-support programs

CONCLUSION

Retirable teachers in Rosario, Agusan del Sur demonstrated high technological readiness, particularly in their positive attitudes toward technology. Their moderate technological skills indicate that willingness has not yet been fully translated into practical competence. At the same time, the teachers experienced substantial barriers, especially those related to infrastructure and institutional support. The significant negative relationship between technological readiness and challenges confirms that strengthening readiness can help reduce difficulties. However, inclusive digital transformation requires more than individual effort. It also requires age-responsive professional

development, supportive leadership, reliable internet connectivity, appropriate devices, and sustained technical assistance. Senior teachers remain valuable members of the educational workforce, and digital initiatives should enable them to continue contributing effectively and with professional dignity.

Recommendations

School administrators should implement continuous, age-responsive ICT training that uses paced instruction, hands-on exercises, and tasks directly related to classroom practice.

Peer mentoring and coaching systems should be established so that digitally proficient teachers can provide accessible and sustained support to colleagues nearing retirement.

DepEd offices and school leaders should prioritize reliable internet connectivity, functional ICT equipment, maintenance services, and technical assistance, especially in rural schools.

Schools should provide protected time and institutional encouragement for retirable teachers to participate in digital-skills development without diminishing their professional dignity or disregarding their extensive teaching experience.

Future researchers should conduct mixed-methods, longitudinal, or intervention-based studies to examine how technological readiness changes over time and which support strategies most effectively reduce barriers among senior educators.

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