# Technological Limitations as a Predictor of Teaching Challenges in Rural Elementary Schools: Evidence from Dolores II District, Eastern Samar, Philippines

**Einna Mikee C. Moscosa, MAED-EM[1], Jerald P. Torillo, PhD[2]**

**[1]PhD Student, Graduate School, Eastern Samar State University Main Campus, Borongan City, Eastern Samar, Philippines, 6800**

**[2]Regular Faculty, Graduate School, Eastern Samar State University Main Campus, Borongan City, Eastern Samar, Philippines, 6800,**

**DOI: https://doi.org/10.47772/IJRISS.2026.101000524**

**Received: 23 October 2026; Accepted: 28 October 2026; Published: 06 November 2026**

## ABSTRACT

Despite the growing importance of technology in education, rural elementary schools continue to contend with infrastructural constraints that may intensify the demands placed on teachers. Understanding how these limitations relate to teaching challenges is essential to developing responsive and context-sensitive educational support. This study examined the extent of technological limitations and teaching challenges among elementary school teachers in Dolores II District, Eastern Samar, Philippines, and investigated the predictive relationship between the two variables. Employing a quantitative descriptive-correlational-predictive design, the study involved 78 regular and permanent teachers from ten public elementary schools through total enumeration. Data were gathered using a researcher-adapted questionnaire and analyzed through descriptive statistics, independent-samples t-tests, one-way analysis of variance, Pearson product-moment correlation, and simple linear regression. Findings revealed a moderate extent of technological limitations ($M = 3.43$), with access to instructional technologies and teaching resources emerging as the most pronounced constraint ($M = 3.51$). Meanwhile, teachers experienced a high extent of teaching challenges ($M = 3.81$), particularly in lesson preparation and instructional delivery ($M = 3.85$). No statistically significant differences in either variable were observed across age, sex, or years of teaching experience. Notably, technological limitations exhibited a strong positive and statistically significant relationship with teaching challenges ($r = .652$, $p < .001$) and significantly predicted their extent ($\beta = .652$, $p < .001$), accounting for 42.5% of the variance ($R^2 = .425$). These findings underscore that technological limitations are not merely concerns about access to equipment and connectivity; they are also associated with the broader instructional demands experienced by rural teachers. The study highlights the need for context-responsive technology provision and sustained instructional support to strengthen teaching conditions in resource-constrained elementary schools.

**Keywords:** technological limitations, teaching challenges, rural elementary schools, digital divide, teacher instructional practices

## INTRODUCTION

### Technology Integration and the Rural Digital Divide

Digital technology can broaden access to instructional materials, support assessment, and create opportunities for learner engagement. However, these benefits depend on whether teachers have the infrastructure, resources, and professional capacity needed to use technology effectively. The Technological Pedagogical Content Knowledge framework emphasizes that meaningful technology integration requires the coordination of technological, pedagogical, and content knowledge rather than the presence of devices alone (Mishra & Koehler, 2006). UNESCO (2023) similarly cautions that technology contributes to education only when its use is relevant, equitable, and supported by appropriate conditions.

Ertmer (1999) distinguishes between external barriers, such as inadequate equipment, limited time, insufficient training, and lack of technical support, and internal barriers related to teachers' beliefs and attitudes. This distinction is important because teaching difficulties may reflect the conditions in which teachers work, not simply their willingness or ability to use technology. Akram et al. (2022) identified infrastructure, accessibility, resources, and professional development as recurring concerns in technology integration. Mustafa et al. (2024) likewise found that technology integration in rural schools involves interconnected challenges at the system, institutional, and teacher levels.

The digital divide also extends beyond whether technology is available. It includes the quality of access and teachers' capacity to use digital tools effectively. Lin et al. (2023), in a large-scale study of teachers, documented differences in digital teaching competence between rural and urban settings and identified ICT skills and data literacy as important factors. These findings support examining technological limitations as contextual conditions that may be associated with teachers' instructional difficulties.

**Technological Limitations and Teaching Challenges**

Technological limitations may affect several aspects of teachers' work. Inadequate devices, unreliable internet connectivity, electricity interruptions, and limited instructional resources can complicate lesson preparation and delivery. These conditions may also restrict opportunities to use digital materials, sustain learner engagement, and provide timely assessment and feedback. Alampay and Capule-Navarro (2023) highlight the importance of considering electricity access alongside internet connectivity in Philippine public schools. A school may have internet service but still face difficulties using digital tools when its power supply or equipment is inadequate.

Teaching challenges also extend beyond the use of technology. Teachers must prepare lessons, manage classrooms, assess learning, and meet administrative and professional responsibilities. The literature reviewed in the thesis identifies concerns involving instructional resources, classroom management, and professional development (Alcontin & Concepcion, 2024; Chin et al., 2022; Tinampay, 2023). Darling-Hammond et al. (2017) also emphasize the importance of teachers' working conditions and professional support. These perspectives suggest that technology limitations should be examined in relation to broader teaching demands without assuming that technology alone explains all instructional difficulties.

**Philippine and Local Context**

These concerns are particularly relevant to Philippine public elementary schools in rural and geographically dispersed communities. The Department of Education's Basic Education Development Plan 2030 recognizes the need to strengthen educational access and address system-level challenges (Department of Education, 2022), while Philippine research has highlighted inequalities in school electricity and internet access (Alampay & Capule-Navarro, 2023). Such conditions make it important to consider technological access, instructional resources, and teacher support together.

Studies conducted in the Philippines provide additional context for understanding teachers' experiences with educational technology. Gaganao et al. (2022) examined teachers' e-learning readiness in Eastern Samar, while Faustino (2024) investigated ICT utilization among Grade 6 teachers in Taft and Sulat Districts. Suyat (2023), in a study conducted at Quezon City University, assessed teachers' strategies for integrating technological knowledge and skills into teaching. The study reported that teachers' perceived technological content knowledge was at a "somewhat confident" level, with an overall mean of 3.32. This finding suggests that teachers' confidence in their technological knowledge is an important consideration in technology integration, although the university-based context differs from that of rural elementary schools.

More directly related to the local setting, Pomarejos et al. (2025) documented perceived barriers to digital-literacy integration among elementary teachers in Dolores, Eastern Samar. These studies address different but complementary aspects of technology integration, including readiness, utilization, technological knowledge, and perceived barriers. Nevertheless, they do not directly establish whether technological limitations statistically predict a broader range of teaching challenges among elementary teachers in Dolores II District. This distinction

highlights the need for localized evidence that examines the relationship between teachers' technological conditions and their instructional difficulties.

**Research Gap and Purpose of the Study**

Although existing literature documents technology-related barriers and teachers' instructional demands, further localized evidence is needed to establish how these conditions are related among rural elementary teachers. Examining technological limitations and teaching challenges separately cannot determine the strength of their association or whether technological limitations significantly predict teaching challenges. A predictive analysis can help establish the statistical contribution of technological limitations while recognizing that other factors, including workload, professional development, school support, and classroom demands, may also be involved (Darling-Hammond et al., 2017; Mustafa et al., 2024).

Although previous studies have investigated teachers' technological readiness, ICT utilization, and barriers to digital integration, limited localized evidence has examined how technological limitations relate to broader teaching challenges encompassing lesson preparation and instructional delivery, classroom management and learner engagement, assessment and feedback, and workload and professional development. The present study addresses this gap by examining technological limitations not merely as an issue of technology access but as a contextual factor statistically associated with the wider instructional responsibilities of elementary school teachers. Its contribution lies in providing district-level empirical evidence on the strength of this relationship and the predictive contribution of technological limitations within rural public elementary schools in Eastern Samar.

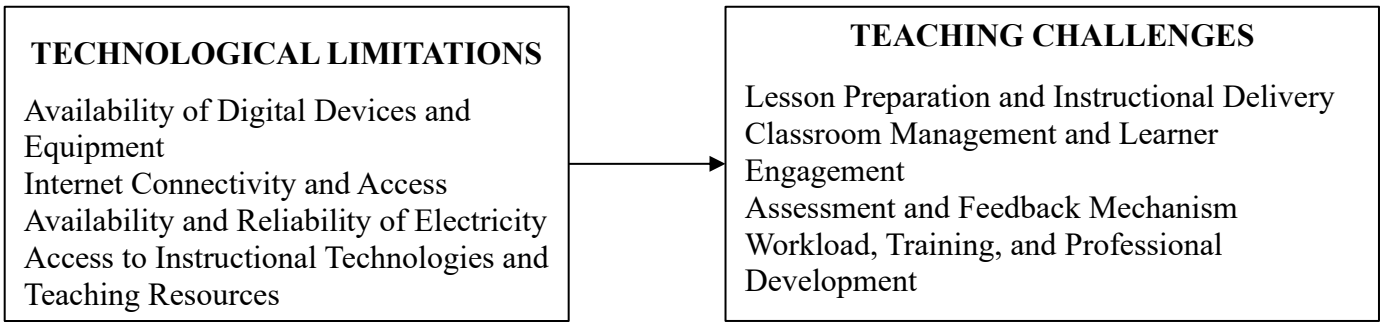
In response to this gap, the present study examined elementary teachers in selected rural public schools in Dolores II District, Eastern Samar. Specifically, it sought to determine (1) the extent of technological limitations experienced by teachers; (2) the extent of their teaching challenges; (3) whether these variables differed according to age, sex, and years of teaching experience; (4) whether technological limitations were significantly associated with teaching challenges; and (5) whether technological limitations significantly predicted teaching challenges.

The study contributes localized statistical evidence by examining technological limitations in relation to teaching challenges rather than treating each as an isolated issue. Its findings may help school and district leaders consider connectivity, devices, electricity, instructional resources, and professional support in school planning. Because the study uses a correlational-predictive design, its findings can establish statistical relationships and prediction but cannot demonstrate causation.

## CONCEPTUAL FRAMEWORK

Figure 1 shows the conceptual framework of the study. It posits that technological limitations are associated with and may predict the teaching challenges experienced by elementary school teachers in rural schools. Technological limitations constitute the independent variable and are examined in terms of the availability of digital devices and equipment, internet connectivity and access, availability and reliability of electricity, and access to instructional technologies and teaching resources. Teaching challenges constitute the dependent variable and are examined in terms of lesson preparation and instructional delivery, classroom management and learner engagement, assessment and feedback mechanisms, and workload, training, and professional development.

Figure 1. Conceptual Framework of the Study




# METHODS

## Research Design

The study employed a quantitative descriptive-correlational-predictive design. The descriptive component was used to determine the demographic profile of the teacher-respondents and describe the extent of technological limitations and teaching challenges they experienced. This component provided a clear picture of the existing technological conditions and instructional difficulties in the Dolores II District.

The correlational component examined the strength and direction of the relationship between technological limitations and teaching challenges. It established whether variations in technological limitations were significantly associated with variations in the challenges experienced by elementary school teachers without manipulating either variable.

The predictive component determined whether technological limitations significantly predicted teaching challenges through regression analysis. This component identified the statistical contribution of technological limitations to variations in teaching challenges, without implying a causal relationship.

This design was most appropriate because the study sought not only to describe existing conditions but also to establish relationships between variables and determine their predictive contribution. By integrating these three components, the design provided a comprehensive quantitative examination of technological limitations and teaching challenges under naturally occurring school conditions, consistent with the study's objectives (Creswell & Creswell, 2018; Fraenkel et al., 2012).

## Locale of the Study

The study was conducted in ten elementary schools in the Dolores II District, Eastern Samar, Philippines: Darahoway, Ipil, Hinolaso, Gap-ang, Sta. Catalina, Jicontol, Luhang, Libertad, Cagdanao, and Osmeña Elementary Schools. The district was selected because its rural educational context provides a relevant setting for examining technological limitations and teaching challenges, particularly those associated with digital infrastructure, internet accessibility, electricity reliability, and instructional resources. Studying these schools within a common district provided an appropriate context for determining the relationship between technological limitations and teaching challenges among elementary school teachers.

## Respondents of the Study

The respondents comprised all 78 regular and permanent elementary school teachers from the ten identified public elementary schools in Dolores II District, Eastern Samar, during School Year 2026–2027. These teachers constituted the entire population of regular and permanent elementary school teachers in the participating schools. The respondents were distributed as follows:

| Public Elementary Schools | Number of Teachers |
|---|---|
| Darahoway Elementary School | 10 |
| Ipil Elementary School | 10 |
| Hinolaso Elementary School | 10 |
| Gap-ang Elementary School | 8 |
| Sta. Catalina Elementary School | 8 |
| Jicontol Elementary School | 8 |
| Luhang Elementary School | 8 |
| Libertad Elementary School | 8 |
| Cagdanao Elementary School | 4 |
| Osmeña Elementary School | 4 |
| **Total** | **78** |

The study included only regular and permanent teachers because these constituted the entire teaching personnel assigned to the ten participating schools during the study period. No contractual, temporary, substitute, or other non-permanent teaching personnel were assigned to these schools. Thus, the inclusion of all 78 regular and permanent teachers ensured that the respondents represented the complete teaching workforce of the identified schools. Their inclusion also ensured that the participants had direct and continuing classroom teaching responsibilities, providing relevant experiences for examining the technological limitations and teaching challenges investigated in the study.

**Sampling Procedure**

The study employed total enumeration sampling, wherein all 78 eligible teachers in the defined population were invited to participate. This technique was appropriate because the population was relatively small, clearly defined, and accessible, making it feasible to include the entire population rather than select only a subset. Moreover, total enumeration maximized population coverage and captured variations in teachers' experiences across schools with potentially different levels of technological access and instructional challenges (Bhardwaj, 2019).

Prior to data collection, the eligibility of the identified teachers was verified based on their current teaching assignments and availability during the study period. No eligible teacher was on extended leave or unavailable during data collection. All 78 invited teachers returned their questionnaires, and all were found complete and valid for statistical analysis. Consequently, the study achieved a 100% response rate, with all 78 questionnaires included in the final analysis.

**Research Instrument**

Data were collected using a researcher-adapted structured questionnaire informed by existing literature on ICT access, teachers' ICT competencies, and technology-related teaching conditions. The instrument consisted of three parts: (1) respondent demographic information, (2) technological limitations, and (3) teaching challenges. The demographic section gathered information on respondents' age, sex, and years of teaching experience. The two principal constructs comprised 30 substantive items, with 15 items allocated to each construct.

The technological-limitations section consisted of 15 items distributed across four dimensions: (1) availability of digital devices and equipment (Items 1–4), (2) internet connectivity and access (Items 5–8), (3) availability and reliability of electricity (Items 9–11), and (4) access to instructional technologies and teaching resources (Items 12–15). The items were adapted with reference to Alampay and Capule-Navarro (2023), concerning electricity and internet access in Philippine public schools, and Lambunao (2024), concerning ICT competencies and technology-related conditions in low-resource elementary school settings. These sources informed the formulation of statements addressing teachers' access to digital devices, internet connectivity, electricity, technical support, and instructional technologies and resources.

The teaching-challenges section consisted of 15 items distributed across four dimensions: (1) lesson preparation and instructional delivery (Items 1–4), (2) classroom management and learner engagement (Items 5–8), (3) assessment practices and feedback mechanisms (Items 9–12), and (4) workload, training, and professional development (Items 13–15). The items were adapted with reference to Alcontin and Concepcion (2024), concerning instructional resources, lesson implementation, and assessment-related conditions; Tinampay (2023), concerning teachers' experiences in hinterland schools, particularly classroom management and learner engagement; and Chin et al. (2022), concerning teachers' workload and professional-development needs. These sources informed the formulation of statements addressing difficulties in preparing and delivering lessons, sustaining learner participation, conducting assessment and providing feedback, and managing instructional responsibilities. The dimensions were also conceptually supported by literature on lesson design, classroom management, feedback, and effective teaching practices (Brookhart, 2017; Darling-Hammond et al., 2017; Gagné et al., 2005; Marzano, 2018; Richards & Bohlke, 2016).

**Measurement of Variables**

Technological limitations were operationally defined as teachers' perceived constraints in accessing and utilizing technological infrastructure and instructional resources necessary for teaching. The measurement reflected teachers' self-reported experiences and perceptions rather than independently verified technical assessments of school facilities, internet speed, electricity reliability, or equipment inventories.

Teaching challenges were operationally defined as teachers' perceived difficulties in performing their instructional responsibilities, including the demands associated with lesson preparation and delivery, classroom management, learner engagement, assessment, feedback, workload, and professional responsibilities.

Both variables were measured using a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Higher scores indicated a greater perceived extent of technological limitations and teaching challenges. Weighted means were computed for individual indicators, dimensions, and overall variables. The resulting mean scores were interpreted as follows: very low (1.00–1.49), low (1.50–2.49), moderate (2.50–3.49), high (3.50–4.49), and very high (4.50–5.00). These classifications provided a consistent basis for describing the extent of technological limitations and teaching challenges reported by the respondents.

**Instrument Validation and Reliability**

To establish the content validity of the researcher-adapted questionnaire, the instrument underwent expert evaluation by three validators with relevant expertise in educational administration, instructional supervision, and research methodology. The validators assessed the clarity, relevance, appropriateness, and alignment of the questionnaire items with the study variables and their respective dimensions. Their evaluations were quantified using the Content Validity Index (CVI), specifically the Item-Level Content Validity Index (I-CVI) and the Scale-Level Content Validity Index based on the average method (S-CVI/Ave). The instrument obtained an I-CVI ranging from 0.67 to 1.00 and an S-CVI/Ave of 0.93, indicating generally strong content validity based on the expert evaluations.

Following expert validation and the necessary revisions, a pilot test was conducted involving 20 teachers from Can-avid District, outside the study locale. The pilot testing assessed the clarity and comprehensibility of the questionnaire and established its internal consistency. Cronbach's alpha was computed separately for the technological-limitations and teaching-challenges sections to determine the reliability of the items under each construct. The technological-limitations section obtained a Cronbach's alpha coefficient of 0.89, while the teaching-challenges section yielded a coefficient of 0.91, indicating good to excellent internal consistency, respectively. These results provided evidence of the instrument's reliability before its administration to the actual respondents.

**Data Gathering Procedure**

Data collection was conducted in four phases. First, during the preliminary phase, the researcher secured permission from the Dolores II District Supervisor and the concerned school heads. Informed consent forms were prepared to explain the study's purpose, voluntary participation, confidentiality measures, and the respondents' right to withdraw. To minimize potential common-method bias, procedural measures were established before questionnaire administration, including assuring respondents that their answers would remain confidential, that no individual responses would be disclosed to school administrators, and that there were no right or wrong answers. These measures were intended to encourage honest responses and reduce evaluation apprehension and socially desirable responding (Podsakoff et al., 2003).

Second, during the distribution phase, printed questionnaires were administered to eligible teacher-respondents following coordination with the respective school heads. The researcher provided standardized instructions and clarified procedural concerns without influencing respondents' answers. The questionnaire was structured into separate sections for technological limitations and teaching challenges to provide a clear distinction between the two constructs. Respondents were encouraged to answer independently, based on their actual experiences and perceptions, without consulting or discussing their responses with other teachers. No identifying information was required on the questionnaire to help reduce evaluation apprehension and socially desirable responding.

Third, during the retrieval phase, completed questionnaires were collected and checked for completeness while maintaining respondent anonymity. The questionnaires were securely stored to prevent unauthorized access. Only the researcher had access to the completed questionnaires and encoded responses.

Finally, during the data processing phase, the responses were reviewed, coded, and encoded into a data matrix. The dataset was checked for incomplete or invalid entries before statistical analysis. Descriptive statistics, correlation analysis, and regression analysis were then conducted in accordance with the study's research objectives, with confidentiality and data integrity maintained throughout the process.

**Data Analysis**

Frequencies and percentages were used to summarize the respondents' demographic characteristics, while weighted means were computed to determine the extent of technological limitations and teaching challenges based on their questionnaire responses. These descriptive statistics provided an overview of the respondents' profiles and the levels of the two principal study variables.

An independent-samples t-test was employed to examine differences in technological limitations and teaching challenges according to sex, while one-way analysis of variance (ANOVA) was used to determine differences according to age and years of teaching experience. These tests were appropriate for comparing mean scores across two independent groups and multiple demographic groups, respectively. Pearson's product-moment correlation coefficient was used to determine the direction and strength of the relationship between technological limitations and teaching challenges. Simple linear regression was subsequently performed to assess the predictive contribution of technological limitations to teaching challenges, with the coefficient of determination ($R^2$) indicating the proportion of variance in teaching challenges explained by the predictor variable.

Harman's single-factor test was conducted to assess the potential presence of common-method bias resulting from the use of a single self-report questionnaire. All 30 substantive questionnaire items were subjected to an unrotated exploratory factor analysis, which revealed that the first factor accounted for 34.62% of the total variance. This was below the commonly used 50% reference threshold, suggesting that no single factor dominated the variance, although this test does not conclusively rule out common-method bias (Podsakoff et al., 2003; Howard et al., 2024).

Considering that respondents were drawn from ten public elementary schools, the potential influence of school-level clustering was also examined through the intraclass correlation coefficient (ICC[1]). ICC[1] estimates the proportion of total variance attributable to differences between groups and indicates the extent of similarity

among individuals belonging to the same group (Bliese, 2000; Hedberg, 2019). The analysis yielded ICC values of .003 for technological limitations and −.028 for teaching challenges, with corresponding nonsignificant ANOVA results, $F(9, 68) = 1.027$, $p = .428$, and $F(9, 68) = 0.792$, $p = .624$, respectively.

All inferential tests were evaluated at the .05 level of significance. Given the nonexperimental, cross-sectional design, correlation and regression findings were interpreted in terms of statistical association and prediction rather than causation.

### Ethical Considerations

Ethical principles were observed throughout the conduct of the study to protect the rights, privacy, and welfare of the participants. Participation was entirely voluntary, and informed consent was obtained from all respondents before data collection. Participants were informed of the purpose of the study and assured that their responses would remain confidential and that their identities would not be disclosed. The collected data were used exclusively for academic and research purposes, with appropriate measures taken to prevent the identification of individual respondents in the analysis, presentation, and reporting of findings.

## RESULT

### Demographic Profile of the Respondents

Table 1 presents the demographic characteristics of the 78 teacher-respondents according to age, sex, and years of teaching experience. These characteristics provide background information about the participants and contextualize the subsequent analyses of technological limitations and teaching challenges.

Table 1. Demographic Profile of the Teacher-Respondents

| **Demographic Variable** | **Frequency** | **Percentage** |
|---|---|---|
| Age | | |
| 21 – 30 years | 20 | 25.6% |
| 31 – 40 years | 29 | 37.2% |
| 41 – 50 years | 17 | 21.8% |
| 51 + years | 12 | 15.4% |
| **Total** | **78** | **100%** |
| Sex | | |
| Male | 32 | 41.0% |
| Female | 46 | 59.0% |
| **Total** | **78** | **100%** |
| Years of Teaching Experience | | |
| 1 – 5 years | 14 | 17.9% |
| 6 – 10 years | 23 | 29.5% |
| 11 – 15 years | 20 | 25.6% |
| 16+ years | 21 | 26.9% |
| **Total** | **78** | **99.9%*** |

*Note.* *Percentages may not total exactly 100.0% due to rounding.

The largest proportion of respondents belonged to the 31–40-year age group (37.2%), followed by those aged 21–30 years (25.6%), 41–50 years (21.8%), and 51 years and above (15.4%). In terms of sex, female teachers constituted 59.0% of the respondents, while male teachers accounted for 41.0%. Regarding teaching experience, the largest group had 6–10 years of service (29.5%), followed by those with 16 years or more (26.9%), 11–15 years (25.6%), and 1–5 years (17.9%). The distribution shows that the respondents represented different age groups and levels of professional experience.

**Extent of Technological Limitations**

Table 2 presents the mean scores and standard deviations for the four dimensions of technological limitations: availability of digital devices and equipment, internet connectivity and access, electricity availability and reliability, and access to instructional technologies and teaching resources.

Table 2. Extent of Technological Limitations Experienced by Teachers

| Indicators | Weighted Mean | SD | Interpretation |
|---|---|---|---|
| Availability of digital devices and equipment | 3.49 | 0.70 | Moderate |
| Internet connectivity and access | 3.32 | 0.74 | Moderate |
| Availability and reliability of electricity | 3.38 | 0.82 | Moderate |
| Access to instructional technologies and teaching resources | 3.51 | 0.70 | High |
| **Overall Mean** | **3.43** | **0.48** | **Moderate** |

The results yielded an overall mean of 3.43 (SD = 0.48), indicating a moderate extent of technological limitations. Among the four dimensions, access to instructional technologies and teaching resources obtained the highest mean (M = 3.51, SD = 0.70), followed by the availability of digital devices and equipment (M = 3.49, SD = 0.70). Electricity availability and reliability obtained a mean of 3.38 (SD = 0.82), while internet connectivity and access received the lowest mean (M = 3.32, SD = 0.74).

The relatively higher mean for access to instructional technologies and teaching resources indicates that this dimension was the most pronounced technological concern reported by the respondents. The result suggests that teachers' perceived technological limitations involve not only basic equipment but also access to instructional materials and resources that support teaching activities. The availability of functional digital devices likewise emerged as an important dimension of their reported technological conditions.

Although internet connectivity and access obtained the lowest mean among the four dimensions, it remained within the moderate category. Electricity availability and reliability recorded the largest standard deviation (SD = 0.82), indicating greater variability in respondents' ratings for this dimension. Overall, the findings show that technological limitations were evident across all four dimensions, although their reported extent varied.

**Extent of Teaching Challenges**

Table 3 presents the mean scores and standard deviations for the four dimensions of teaching challenges: lesson preparation and instructional delivery, classroom management and learner engagement, assessment and feedback mechanisms, and workload, training, and professional development.

Table 3. Extent of Teaching Challenges Encountered by Teachers

| Indicators | Weighted Mean | SD | Interpretation |
|---|---|---|---|
| Lesson preparation and instructional delivery | 3.85 | 0.67 | High |
| Classroom management and learner engagement | 3.83 | 0.75 | High |
| Assessment and feedback mechanisms | 3.78 | 0.75 | High |
| Workload, training, and professional development | 3.77 | 0.80 | High |
| **Overall Mean** | **3.81** | **0.49** | **High** |

The overall mean for teaching challenges was 3.81 (SD = 0.49), indicating a high extent of challenges experienced by teachers. Lesson preparation and instructional delivery obtained the highest mean (M = 3.85, SD = 0.67), followed by classroom management and learner engagement (M = 3.83, SD = 0.75). Assessment and feedback mechanisms obtained a mean of 3.78 (SD = 0.75), while workload, training, and professional development received the lowest mean (M = 3.77, SD = 0.80).

The results indicate that lesson preparation and instructional delivery constituted the most pronounced dimension of teaching challenges among the respondents. Classroom management and learner engagement also obtained a relatively high mean, suggesting that teachers reported considerable challenges in sustaining learner participation and managing classroom activities. Similarly, the results for assessment and feedback reflect difficulties associated with monitoring learner progress and providing feedback.

Although workload, training, and professional development obtained the lowest mean among the four dimensions, its rating remained within the high category. This indicates that teachers also experienced considerable demands related to their professional and instructional responsibilities. Taken together, the results show that teaching challenges were evident across all four dimensions rather than being concentrated in a single area.

**Differences in Technological Limitations According to Demographic Variables**

Table 4 presents the differences in technological limitations according to age, sex, and years of teaching experience. Independent-samples t-test and one-way analysis of variance were used to determine whether the observed group differences were statistically significant.

Table 4. Differences in Technological Limitations According to Demographic Variables

| Demographic Variable | Group | n | Mean | SD | Test Statistic | p-value |
|---|---|---|---|---|---|---|
| Age | 21-30 years | 20 | 3.43 | 0.41 | | |
| | 31-40 years | 29 | 3.36 | 0.53 | | |
| | 41-50 years | 17 | 3.42 | 0.53 | | |
| | 51 years and above | 12 | 3.61 | 0.34 | *F(3, 74) = 0.765* | *0.517* |
| Sex | Male | 32 | 3.44 | 0.52 | | |
| | Female | 46 | 3.42 | 0.45 | *t(76) = 0.213* | *0.832* |
| Teaching Experience | 1-5 years | 14 | 3.25 | 0.57 | | |
| | 6-10 years | 23 | 3.48 | 0.51 | | |
| | 11-15 years | 20 | 3.49 | 0.41 | | |
| | 16 years and above | 21 | 3.44 | 0.44 | *F(3, 74) = 0.824* | *0.485* |

*Note.* The effect sizes were small: age $\eta^2 = .030$; sex Cohen's d = .049; and teaching experience $\eta^2 = .032$.
The results revealed no statistically significant differences in technological limitations according to age, F(3, 74) = 0.765, p = .517; sex, t(76) = 0.213, p = .832; or years of teaching experience, F(3, 74) = 0.824, p = .485. The corresponding effect sizes were also small.

Descriptively, teachers aged 51 years and above obtained the highest mean (M = 3.61), while those aged 31–40 years obtained the lowest (M = 3.36). Male and female teachers reported nearly identical mean scores. Across teaching-experience categories, the highest mean was recorded among teachers with 11–15 years of service (M = 3.49), while those with 1–5 years of experience obtained the lowest mean (M = 3.25). However, these observed differences were not statistically significant.

**Differences in Teaching Challenges According to Demographic Variables**

Table 5 presents the differences in teaching challenges according to age, sex, and years of teaching experience. The analyses determine whether the reported teaching challenges varied significantly across the demographic groups.

Table 5. Differences in Teaching Challenges According to Demographic Variables

| Demographic Variable | Group | n | Mean | SD | Test Statistic | p-value |
|---|---|---|---|---|---|---|
| Age | 21-30 years | 20 | 3.74 | 0.41 | | |
| | 31-40 years | 29 | 3.73 | 0.53 | | |
| | 41-50 years | 17 | 3.93 | 0.54 | | |
| | 51 years and above | 12 | 3.96 | 0.42 | *F(3, 74) = 1.145* | *0.337* |
| Sex | Male | 32 | 3.83 | 0.54 | | |
| | Female | 46 | 3.80 | 0.45 | *t(76) = 0.314* | *0.754* |
| Teaching Experience | 1-5 years | 14 | 3.73 | 0.42 | | |
| | 6-10 years | 23 | 3.81 | 0.52 | | |
| | 11-15 years | 20 | 3.83 | 0.51 | | |
| | 16 years and above | 21 | 3.84 | 0.50 | *F(3, 74) = 0.155* | *0.926* |

*Note.* The effect sizes were small: age $\eta^2 = .044$; sex Cohen's d = .072; and teaching experience $\eta^2 = .006$.
The results revealed no statistically significant differences in teaching challenges according to age, $F(3, 74) = 1.145$, $p = .337$; sex, $t(76) = 0.314$, $p = .754$; or years of teaching experience, $F(3, 74) = 0.155$, $p = .926$. The corresponding effect sizes were small, indicating limited differences among the demographic groups.

Descriptively, teachers aged 51 years and above obtained the highest mean for teaching challenges (M = 3.96), followed by those aged 41–50 years (M = 3.93). Male and female teachers reported comparable mean scores. In terms of teaching experience, teachers with 16 years or more of service obtained the highest mean (M = 3.84), while those with 1–5 years of experience obtained the lowest mean (M = 3.73). Nevertheless, none of these differences reached statistical significance.

**Relationship Between Technological Limitations and Teaching Challenges**

Table 6 presents the Pearson product-moment correlation analysis examining the relationship between technological limitations and teaching challenges.

Table 6. Correlation Between Technological Limitations and Teaching Challenges

| Variables Correlated | r-value | p-value | Interpretation |
|---|---|---|---|
| Technological Limitations and Teaching Challenges | .652 | <.001 | Strong Positive Relationship |

The analysis revealed a strong positive relationship between technological limitations and teaching challenges ($r = .652$, $p < .001$). This indicates that respondents who reported greater technological limitations also tended to report greater teaching challenges.

The strength and direction of the correlation indicate that the two principal variables were positively associated within the sample. This finding is consistent with literature identifying access to technological resources, teacher capacity, and contextual support as important considerations in technology integration (Lin et al., 2023; Mustafa et al., 2024). The result provides localized evidence of the association between teachers' perceived technological conditions and their reported instructional difficulties.

**Predictive Contribution of Technological Limitations to Teaching Challenges**

Table 7 presents the simple linear regression analysis examining the extent to which technological limitations statistically predict teaching challenges.

Table 7. Simple Linear Regression Analysis of Technological Limitations as a Predictor of Teaching Challenges

| **Model Term** | | **B** | **SE B** | **β** | ***t*** | ***p*** |
|---|---|---|---|---|---|---|
| Constant | | 1.513 | 0.309 | ----- | 4.888 | < 0.001 |
| Technological Limitations | | 0.670 | 0.089 | 0.652 | 7.496 | < 0.001 |
| **Model Summary** | | | | | | |
| **R** | **$R^2$** | **Adjusted $R^2$** | | | ***F*(1, 76)** | ***p*** |
| 0.652 | .425 | .418 | | | 56.194 | <0.001 |

*Note.* B = unstandardized regression coefficient; SE B = standard error of B; β = standardized regression coefficient.

The regression analysis indicated that technological limitations significantly predicted teaching challenges, B = 0.670, β = .652, t(76) = 7.496, p < .001. The positive regression coefficient indicates that higher technological limitation scores were associated with higher predicted teaching-challenge scores. Specifically, a one-point increase in the technological limitations score corresponded to an estimated 0.670-point increase in the predicted teaching-challenge score.

The regression model was statistically significant, F(1, 76) = 56.194, p < .001, and yielded an $R^2$ of .425. This indicates that technological limitations statistically accounted for approximately 42.5% of the variance in teaching challenges within the sample. The adjusted $R^2$ of .418 indicates a similar explanatory contribution after adjustment for sample size and the number of predictors.

**School-Level Clustering**

Considering that respondents were drawn from ten public elementary schools, the potential influence of school-level clustering was examined through the intraclass correlation coefficient (ICC[1]). Table 8 presents the estimated ICC values and corresponding one-way ANOVA results for the two principal study variables.

Table 8. Intraclass Correlation Coefficients for Technological Limitations and Teaching Challenges

| **Variable** | **ICC(1)** | ***F*(9, 68)** | ***p*-value** |
|---|---|---|---|
| Technological Limitations | 0.003 | 1.027 | 0.428 |
| Teaching Challenges | -0.028 | 0.792 | 0.624 |

The ICC estimate for technological limitations was .003, indicating negligible between-school variation in the dataset. For teaching challenges, the estimated ICC was −.028. A negative sample ICC may occur when estimated between-school variance is smaller than within-school variance; it is generally interpreted as providing no evidence of positive clustering rather than as meaningful negative clustering.

The corresponding ANOVA results were nonsignificant for technological limitations, F(9, 68) = 1.027, p = .428, and teaching challenges, F(9, 68) = 0.792, p = .624. These results suggest that the observed differences between schools were not statistically significant in the dataset.

## DISCUSSION

The findings provide an overview of technological limitations and teaching challenges among elementary school teachers in the participating public schools in Dolores II District, Eastern Samar. The descriptive results indicate that technological limitations were experienced to a moderate extent, while teaching challenges were experienced to a high extent. The dimension-level findings further show that teachers' reported concerns involve several aspects of technological access and instructional responsibilities.

Access to instructional technologies and teaching resources obtained the highest mean among the four dimensions of technological limitations, followed closely by the availability of digital devices and equipment. This suggests that teachers' perceived technological limitations extend beyond basic connectivity and electricity. Access to appropriate instructional materials, educational applications, and functional equipment is also relevant to their reported technological conditions. These findings are consistent with studies emphasizing the importance of infrastructure, accessibility, resources, and contextual support in technology integration (Akram et al., 2022; Mustafa et al., 2024). They also reflect concerns regarding electricity and internet access in Philippine public schools (Alampay & Capule-Navarro, 2023). Local evidence from Dolores, Eastern Samar, similarly identifies barriers to digital-literacy integration among elementary teachers (Pomarejos et al., 2025).

With respect to teaching challenges, lesson preparation and instructional delivery obtained the highest mean. This indicates that teachers particularly reported challenges involving the preparation and implementation of instruction. These responsibilities include developing instructional materials, designing appropriate learning activities, and adapting teaching strategies to learner needs. The finding is relevant to literature emphasizing the importance of instructional planning, appropriate learning resources, and effective lesson implementation (Gagné et al., 2005; Richards & Bohlke, 2016).

Classroom management and learner engagement also obtained a high mean, indicating that teachers reported considerable challenges in sustaining learner participation and organizing classroom activities. Effective classroom management involves establishing an environment conducive to learning and maintaining learners' engagement throughout instruction (Marzano, 2018). The finding highlights classroom management as another important dimension of the professional demands experienced by the respondents.

Assessment and feedback mechanisms likewise received a high mean. This suggests that teachers experienced challenges related to preparing assessment activities, monitoring learner progress, and providing feedback. These responsibilities are important components of effective instruction because assessment information helps teachers identify learning needs and guide subsequent instructional decisions. Brookhart (2017) emphasizes that effective feedback should provide learners with information that can support improvement in their performance.

Workload, training, and professional development obtained the lowest mean among the four dimensions, although it remained within the high category. This indicates that teachers also reported substantial demands associated with their professional responsibilities. These may include balancing instruction, assessment, administrative tasks, and professional learning. Darling-Hammond et al. (2017) emphasize the importance of meaningful professional development and supportive working conditions in strengthening teaching practice. The present finding reinforces the relevance of considering teachers' workload and professional support alongside instructional concerns.

The analyses of demographic differences revealed no statistically significant differences in technological limitations according to age, sex, and years of teaching experience. Similarly, teaching challenges did not differ significantly across these demographic categories. These findings indicate that the study did not detect statistically significant variations in the two principal variables among the demographic groups examined. They also suggest that age, sex, and teaching experience did not distinguish respondents' reported experiences within the present sample.

The correlation analysis further established a strong positive relationship between technological limitations and teaching challenges ($r = .652$, $p < .001$). This means that respondents who reported greater technological limitations also tended to report greater teaching challenges. The finding is consistent with research identifying technological access, teacher capacity, and contextual support as relevant considerations in technology integration (Lin et al., 2023; Mustafa et al., 2024). It provides localized evidence that technological limitations are associated with a broader range of instructional difficulties among the participating elementary school teachers.

The regression analysis provided further evidence of this relationship by demonstrating that technological limitations significantly predicted teaching challenges. The model accounted for 42.5% of the variance in

teaching challenges, indicating a substantial statistical contribution within the specified model. This finding emphasizes the relevance of technological conditions in understanding teachers' reported instructional difficulties. It also supports examining technological limitations alongside other dimensions of teachers' professional responsibilities when understanding the challenges encountered in rural elementary schools.

In summary, the findings indicate that technological limitations are significantly associated with teaching challenges and contribute to their statistical prediction. The results provide localized evidence that technological access and teachers' instructional experiences are related within the participating schools. They also highlight the importance of examining technological conditions in conjunction with the broader responsibilities involved in elementary teaching.

## CONCLUSION

The study concludes that elementary school teachers in Dolores II District, Eastern Samar, experience a moderate extent of technological limitations and a high extent of teaching challenges. Among the dimensions of technological limitations, access to instructional technologies and teaching resources received the highest mean, followed by the availability of digital devices. Meanwhile, lesson preparation and instructional delivery emerged as the most pronounced teaching challenge. These findings indicate that although teachers encounter technological constraints, they continue to manage substantial instructional responsibilities in their respective school contexts.

The findings further revealed that technological limitations and teaching challenges did not significantly differ when teachers were grouped according to age, sex, and years of teaching experience. This suggests that the reported experiences were generally shared across the demographic groups examined. Moreover, technological limitations were positively and significantly associated with teaching challenges and significantly predicted their extent, accounting for 42.5% of the variance in teaching challenges. This indicates that greater technological limitations tend to correspond with greater teaching challenges, although the cross-sectional design does not establish a causal relationship.

Generally, the study highlights the relevance of technological conditions in understanding the instructional difficulties experienced by teachers in rural elementary schools. While technological limitations do not account for all the challenges teachers encounter, they represent an important factor associated with the demands of lesson preparation, instructional delivery, and other teaching responsibilities in resource-constrained educational settings.

## RECOMMENDATION

In view of the findings, school and district administrators should prioritize addressing the technological limitations experienced by teachers, particularly by improving internet connectivity, providing functional digital devices, and ensuring access to appropriate instructional resources. These initiatives should be supported by adequate technical assistance and resource allocation, with particular consideration for schools in geographically isolated and resource-constrained communities. Furthermore, school heads and district supervisors should strengthen instructional support by providing practical, context-responsive professional development that equips teachers to maximize available technologies in lesson preparation, instructional delivery, classroom management, and assessment. They should also assess teachers' workload distribution and other organizational demands to ensure that instructional responsibilities, administrative tasks, and professional development activities are managed effectively.

Teachers should be encouraged to participate in collaborative learning opportunities, share effective instructional practices, and develop adaptable teaching materials that can be used even when technological resources and internet connectivity are limited. These initiatives may help strengthen their capacity to address instructional demands within their respective school contexts. Finally, future researchers should examine additional teacher- and school-level factors that may contribute to teaching challenges, such as workload, class size, school leadership support, professional development, and resource availability. Studies involving larger samples across

multiple districts and employing longitudinal or mixed-methods designs are also recommended to provide a more comprehensive understanding of how technological conditions interact with teachers' instructional responsibilities over time and to establish a stronger evidence base for developing contextually appropriate interventions in resource-constrained schools.

**Limitations**

The findings should be interpreted in light of several limitations. The cross-sectional, correlational-predictive design does not establish causality between technological limitations and teaching challenges. Moreover, both variables were measured through a researcher-adapted self-report questionnaire; hence, the results reflect teachers' perceptions rather than independently verified conditions. Using a single instrument may also introduce common-method bias, which cannot be entirely ruled out by procedural measures or Harman's single-factor test.

The study was limited to 78 regular and permanent elementary teachers from ten public schools in Dolores II District, Eastern Samar, which may restrict the generalizability of the findings to other educational settings. Differences in school conditions may also result in similarities among responses from teachers within the same institution. Finally, the regression model considered technological limitations as its sole predictor, excluding other factors such as class size, workload, leadership support, and professional development. Future studies may address these limitations through broader samples, additional predictors, and longitudinal or multilevel research designs.

## ACKNOWLEDGEMENTS

The researcher extends sincere gratitude to the school administrators and teacher-respondents who generously shared their time and insights for this study. Appreciation is also extended to the research adviser and expert validators for their valuable guidance and recommendations throughout the research process. Finally, the researcher acknowledges the authors and scholars whose works provided the theoretical and empirical foundations for this study.

## REFERENCES

1. Akram, H., Abdelrady, A. H., Al-Adwan, A. S., & Ramzan, M. (2022). Teachers' perceptions of technology integration in teaching-learning practices: A systematic review. Frontiers in Psychology, 13, Article 920317. https://doi.org/10.3389/fpsyg.2022.920317
2. Alampay, E. A., & Capule-Navarro, M. T. (2023). Provision of electricity and internet access in DepEd schools: Implications on school performance and digital inclusivity in the new normal. Philippine Journal of Public Policy: Interdisciplinary Development Perspectives, 2023, 35–63.
3. Alcontin, P. C. S., & Concepcion, K. M. D. (2024). The learning environment of a far-flung national high school: Stakeholders' perspective. European Journal of Education Studies, 11(2). https://doi.org/10.46827/ejes.v11i2.5213
4. Bhardwaj, P. (2019). Types of sampling in research. Journal of the Practice of Cardiovascular Sciences, 5(3), 157–163. https://doi.org/10.4103/jpcs.jpcs_62_19
5. Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein & S. W. J. Kozlowski (Eds.), Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions (pp. 349–381). Jossey-Bass.
6. Brookhart, S. M. (2017). How to give effective feedback to your students (2nd ed.). ASCD.
7. Chin, J. M.-C., Ching, G. S., del Castillo, F., Wen, T.-H., Huang, Y.-C., del Castillo, C. D., Gungon, J. L., & Trajera, S. M. (2022). Perspectives on the barriers to and needs of teachers' professional development in the Philippines during COVID-19. Sustainability, 14(1), Article 470. https://doi.org/10.3390/su14010470
8. Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE Publications.

9. Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). Effective teacher professional development. Learning Policy Institute. https://learningpolicyinstitute.org/product/effective-teacher-professional-development-report
10. Department of Education. (2022). Basic Education Development Plan 2030.
11. Ertmer, P. A. (1999). Addressing first- and second-order barriers to change: Strategies for technology integration. Educational Technology Research and Development, 47(4), 47–61. https://doi.org/10.1007/BF02299597
12. Faustino, M. A. L. (2024). Extent of information and communication technology (ICT) utilization among Grade 6 teachers in the implementation of distance learning. International Journal of Research and Innovation in Social Science, 8(3), 855–864. https://doi.org/10.47772/IJRISS.2024.803062
13. Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). How to design and evaluate research in education (8th ed.). McGraw-Hill.
14. Gaganao, R. D., Discar, R. N., & Fabillar, I. N. L. (2022). E-learning readiness of teachers in the new normal education: The case of national high schools in Eastern Samar. International Journal of Evaluation and Research in Education, 11(3), 1040–1048. https://doi.org/10.11591/ijere.v11i3.22542
15. Gagné, R. M., Wager, W. W., Golas, K., & Keller, J. (2005). Principles of instructional design (5th ed.). Wadsworth/Thomson Learning.
16. Hedberg, E. C. (2019). Intraclass correlation. In The SAGE encyclopedia of communication research methods. SAGE Publications. https://doi.org/10.4135/9781483381411.n277
17. Howard, M. C., Boudreaux, M., & Oglesby, M. (2024). Can Harman's single-factor test reliably distinguish between research designs? Not in published management studies. European Journal of Work and Organizational Psychology, 33(6), 790–804. https://doi.org/10.1080/1359432X.2024.2393462
18. Lambunao, G. B. (2024). Enhancing ICT competency among public elementary teachers: A case study in Manolo Fortich II District, Bukidnon. International Journal of Research and Innovation in Social Science, 8(3S), 5645–5648. https://doi.org/10.47772/IJRISS.2024.803423S
19. Lin, R., Chu, J., Yang, L., Lou, L., Yu, H., & Yang, J. (2023). What are the determinants of rural-urban divide in teachers' digital teaching competence? Empirical evidence from a large sample. Humanities and Social Sciences Communications, 10, Article 422. https://doi.org/10.1057/s41599-023-01933-2
20. Marzano, R. J. (2018). Classroom management that works: Research-based strategies for every teacher (2nd ed.). ASCD.
21. Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108(6), 1017–1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x
22. Mustafa, F., Nguyen, H. T. M., & Gao, X. (2024). The challenges and solutions of technology integration in rural schools: A systematic literature review. International Journal of Educational Research, 126, Article 102380. https://doi.org/10.1016/j.ijer.2024.102380
23. Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. Journal of Applied Psychology, 88(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879
24. Pomarejos, S. M., Balato, R. S., Jaromay, M. M., Lascano, J. G., Busa, M. N., Capon, E. L., Godino, D. O., Rodriguez, J. N., Echanis, E. A., Erazo, J. D., & Quiloña, J. D. G. (2025). Barriers and solutions for digital literacy integration in elementary education: Teachers' perspectives in Dolores, Eastern Samar. EPRA International Journal of Multidisciplinary Research, 11(2), 251–259. https://doi.org/10.36713/epra20162
25. Richards, J. C., & Bohlke, D. (2016). Creating effective language lessons. Cambridge University Press.
26. Suyat, A. C. (2023). An assessment of strategies used in teaching with the integration of knowledge and skills using technology. QCU The Lamp: Journal of Education, 1(1), 73–98. https://doi.org/10.64807/nm1gyg24
27. Tinampay, F. B. (2023). Lived experiences of teachers in the hinterland school: Management plan. Psychology and Education: A Multidisciplinary Journal, 13(8), 809–822. https://doi.org/10.5281/zenodo.8368735
28. UNESCO. (2023). Global education monitoring report 2023: Technology in education—A tool on whose terms? https://doi.org/10.54676/UZQV8501

## Appendix

SURVEY QUESTIONNAIRE

### PART I. RESPONDENT PROFILE (DEMOGRAPHIC INFORMATION)

*(Answer by checking the appropriate box or filling in the blank)*

1. Age: ____
2. Sex:

   ☐ Male ☐ Female ☐ Prefer not to say

3. Years of Teaching Experience:

   ☐ 1–5 years ☐ 6–10 years ☐ 11–15 years ☐ 16 years and above

### PART II. TECHNOLOGICAL LIMITATIONS

**Instructions:** The following statements describe the technological conditions in your school and your access to technological resources for teaching. Please indicate the extent to which you agree with each statement by placing a check mark (✓) in the appropriate column. Use the scale below for your responses:

| Scale | Description |
|---|---|
| 5 | Strongly Agree |
| 4 | Agree |
| 3 | Neutral |
| 2 | Disagree |
| 1 | Strongly Disagree |

Note: Higher scores indicate a greater extent of technological limitations.

| STATEMENT | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|
| **Availability of Digital Devices and Equipment** | **Strongly Agree** | **Agree** | **Neutral** | **Disagree** | **Strongly Disagree** |
| 1. I have difficulty accessing a functional laptop, desktop computer, or tablet when needed for teaching. | | | | | |
| 2. The school has insufficient digital devices and equipment for instructional use. | | | | | |
| 3. The digital devices available in the school are often outdated or unsuitable for current teaching needs. | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 4. Limited technical support makes it difficult to address problems with digital devices and equipment. | | | | | |
| **Internet Connectivity and Access** | | | | | |
| 5. Internet connectivity in the school is unstable or unreliable. | | | | | |
| 6. I have difficulty accessing the internet at home when preparing teaching materials. | | | | | |
| 7. The speed or bandwidth of the available internet connection is insufficient for teaching-related activities. | | | | | |
| 8. Internet connectivity problems make it difficult to access online learning platforms and instructional resources. | | | | | |
| **Availability and Reliability of Electricity** | | | | | |
| 9. Unreliable electricity supply disrupts the use of technology in my school. | | | | | |
| 10. Power interruptions frequently occur during teaching or lesson preparation activities. | | | | | |
| 11. The school has limited access to alternative power sources when electricity is unavailable. | | | | | |
| **Access to Instructional Technologies and Teaching Resources** | | | | | |
| 12. I have limited access to digital | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| teaching resources such as e-books, simulations, and educational applications. | | | | | |
| 13. Available online instructional materials are insufficient for my teaching needs. | | | | | |
| 14. I have limited access to instructional technologies that support interactive or multimedia-based teaching. | | | | | |
| 15. The ICT resources available in the school are insufficient to meet my instructional needs. | | | | | |

**PART III. TEACHING CHALLENGES**

**Instructions:** Please read each statement carefully and indicate the extent to which you agree with each statement based on your actual teaching experience. Place a check mark (✓) in the appropriate column. Use the scale below for your responses:

| Scale | Description |
|---|---|
| 5 | Strongly Agree |
| 4 | Agree |
| 3 | Neutral |
| 2 | Disagree |
| 1 | Strongly Disagree |

Note: Higher scores indicate a greater extent of teaching challenges.

| **STATEMENT** | **5** | **4** | **3** | **2** | **1** |
|---|---|---|---|---|---|
| **Lesson Preparation and Instructional Delivery** | **Strongly Agree** | **Agree** | **Neutral** | **Disagree** | **Strongly Disagree** |
| 1. I experience difficulty preparing instructional materials within the time available to me. | | | | | |
| 2. I find it challenging to provide varied learning activities that address different learner needs. | | | | | |
| 3. I experience difficulty delivering lessons that are sufficiently engaging and interactive. | | | | | |
| 4. I find it challenging to adapt my instructional | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| strategies when usual teaching resources are unavailable. | | | | | |
| **Classroom Management and Learner Engagement** | | | | | |
| 5. I experience difficulty sustaining learners' attention during lessons. | | | | | |
| 6. I find it challenging to maintain active learner participation throughout the lesson. | | | | | |
| 7. I experience difficulty managing classroom activities that require learners to work collaboratively. | | | | | |
| 8. I find it challenging to maintain learner engagement when instructional activities cannot be varied. | | | | | |
| **Assessment Practices and Feedback Mechanisms** | | | | | |
| 9. I experience difficulty preparing assessment materials within the time available to me. | | | | | |
| 10. I find it challenging to provide a variety of assessment activities for my learners. | | | | | |
| 11. I experience difficulty providing timely feedback on learners' work. | | | | | |
| 12. I find it challenging to monitor and document learners' progress efficiently. | | | | | |
| **Workload, Training, and Professional Development** | | | | | |
| 13. I experience difficulty completing my teaching-related tasks within the available working time. | | | | | |
| 14. I find it challenging to balance lesson preparation, teaching, assessment, and other school responsibilities. | | | | | |
| 15. I experience stress when managing multiple instructional responsibilities at the same time. | | | | | |