

# Implementation of Department of Education Computerization Program in Zumarraga and Daram Districts, Division of Samar

**RHALD LEMUEL C. MONTALLANA**

Senior High School Teacher II  
Bioso Integrated School, Zumarraga, Samar  
rhaldlemuel.montallana@deped.gov.ph

**JOANIS M. MERCENES**

joanismercenens92@gmail.com

**MARK ANTHONY A. CINCO**

macjello555@gmail.com

*Abstract* — This study determines the Implementation of Department of Education Computerization Program (DCP) in Zumarraga and Daram District, Division of Samar during the School Year 2025-2026 with the end view of developing a capacity program. The study aimed to examine the extent is the implementation of DepEd computerization program in terms of a.) Infrastructure, b.) Integration of ICT to the school system, c.) Raising the ICT Literacy of the learners; and d.) Monitoring and Evaluation and the challenges encountered by the schools in implementing the DCP effectively. Using descriptive-correlational approach, data were collected through the use of questionnaires. To determine whether the data is normal, the Shapiro-Wilk test was used prior to correlation analysis. Relationships between continuous profile variables and DCP implementation, point-biserial correlation for dichotomous variables (such as sex or civil status), and ETA correlation for nominal variables (such as educational attainment) will be ascertained using Pearson's  $r$  if the data has a normal distribution. Non-parametric tests, such as the Kruskal-Wallis H test for nominal variables, the Mann-Whitney U test for dichotomous variables, and Spearman's rho for ordinal and continuous variables, will be used when the data is not normally distributed.

The findings revealed the implementation of the DepEd Computerization Program was rated "To a Large Extent" in three dimensions: Infrastructure, Integration of ICT to the School System and Raising the ICT Literacy of the Learners; and "To Very Large Extent" in Monitoring and Evaluation . The most significant implementation gap was in internet connectivity, rated as "Not at All" implemented, while physical infrastructure, maintenance, and monitoring systems were rated exceptionally high. The challenges encountered in implementing the DCP were predominantly infrastructure-related, with limited internet connectivity being the most pervasive, followed by insufficient technical support and maintenance , and inadequate number of computer units for students . Other challenges included limited teacher training on ICT integration.

The study concludes that implementation of the DepEd Computerization Program demonstrates uneven development across dimensions, with exceptionally strong monitoring and evaluation systems contrasting with severe connectivity limitations. The challenges in DCP implementation reflect fundamental infrastructure issues, particularly connectivity, technical support, and equipment availability.

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*Keywords — Inclusive Education, Technological Capabilities, Teacher Perceptions, Methodology, Educational Support Strategies*

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## I. Introduction

In this rapidly changing technological age, understanding of computers and how they operate is becoming more and more essential. A person without computer knowledge will be considered primitive in the light of present-day standards. That is why a literate person must also be a computer literate. To thrive the digital economy, students will need digital age proficiencies. It is important for the educational system to make parallel changes in order to fulfill its mission in society, such as the preparation of learners for the world

However, an important project to modernize public schools is the DepEd Computerization Program (DCP), which aims to improve teaching and learning by providing computers, IT infrastructure, and digital learning resources. It aims to advance ICT-based education and close the digital divide. Nevertheless, there are still a number of implementation gaps in spite of its encouraging objectives. Many schools struggle with issues like poor upkeep, inadequate training for teachers in ICT integration, and restricted availability of dependable internet connectivity. Furthermore, the overall impact of the program is impacted because some schools are better equipped than others due to differences in the distribution of computer packages. To guarantee that the DCP successfully improves education and equips students for the demands of a digital society, these gaps must be filled.

This study's strength is its examination of the DepEd Computerization Program's (DCP) implementation and its effects on educational establishments, specifically in terms of raising the standard of instruction and learning. Through an examination of the program's execution, the research seeks to pinpoint its achievements, obstacles, and opportunities for enhancement. This study is essential because it gives administrators, educators, and legislators insightful information that helps them optimize the advantages of integrating technology into the classroom. Furthermore, by improving student engagement, bridging the digital divide, and giving students the digital skills, they need for the twenty-first century, the findings can help develop more effective strategies. In the end, this study emphasizes how technology can improve education and encourage creativity in the Philippine educational system.

## II. Methodology

The research study made use of the descriptive-correlational research design. It is descriptive quantitative because it determines the profile of the school heads in terms of age, gender, civil status, highest educational attainment, length of administrative service, and related seminars and trainings attended; and extent have the computer units and resources provided under the DCP been distributed and maintained in the selected schools of Zumarraga and Daram District. In addition, this study is correlational because it tests the relationships between and among the

listed variables. The researchers sought permission from the head of the office where the research was conducted and presented a transmittal letter to the Schools Division Superintendent seeking authorization for the study. The researchers distributed, administered, and retrieved the questionnaire from the respondents. The responses were tabulated, analyzed, and interpreted using various statistical tests, including percentage, simple mean, and the sum of ranks.

For a thorough examination of the DepEd Computerization Program (DCP) implementation in Zumarraga and Daram District, SPSS version 21 was used in the study. In order to analyze the profiles of school heads and gauge the degree of DCP implementation based on six important dimensions—the number of distributed units, geographic coverage, operational status, maintenance schedules, teacher training utilization, and student access—descriptive statistics such as frequency, percentage, mean, and standard deviation will be used.

To determine whether the data is normal, the Shapiro-Wilk test was used prior to correlation analysis. Relationships between continuous profile variables and DCP implementation, point-biserial correlation for dichotomous variables (such as sex or civil status), and ETA correlation for nominal variables (such as educational attainment) will be ascertained using Pearson's  $r$  if the data has a normal distribution. Non-parametric tests, such as the Kruskal-Wallis H test for nominal variables, the Mann-Whitney U test for dichotomous variables, and Spearman's rho for ordinal and continuous variables, will be used when the data is not normally distributed.

To further identify and classify the difficulties encountered in DCP implementation, a qualitative thematic analysis was carried out. A thorough statistical and qualitative evaluation will be guaranteed by this mixed-methods approach, which will also successfully test the null hypothesis and answer all research questions.

### III. Results and Discussion

#### Profile of the Respondents

**Age.** The majority of the respondents belong to the 49-55 years old age bracket with 41 or 43.62 percent of the total population. This is followed by those aged 42-48 years old with 30 respondents or 31.91 percent. School heads aged 35-41 years old comprise 15 or 15.96 percent of the respondents, while the least represented age group is 56-62 years old with only 8 or 8.51 percent. The overall mean age of the respondents is 48.23 years with a standard deviation of 6.47, indicating that most school heads in the study are middle-aged administrators with substantial life experience.

**Sex.** The data reveals that female school heads slightly outnumber their male counterparts with 50 or 53.19 percent of the total respondents, while male school heads comprise 44 or 46.81

percent. This distribution demonstrates a relatively balanced gender representation among school administrators in the study area, with a slight predominance of female leadership in the educational sector.

**Civil Status.** The data reveals that an overwhelming majority of the respondents are married, comprising 85 or 90.43 percent of the total population. Single school heads account for only 5 or 5.32 percent, while widowed respondents represent the smallest group with 4 or 4.25 percent. This distribution indicates that most school administrators in the study area have established family units, which may influence their professional perspectives and commitments. The predominance of married school heads in Zumarraga and Daram District aligns with the typical demographic profile of educational leaders in the Philippine context, where career advancement to administrative positions often coincides with personal life milestones such as marriage. This finding relates to the social context emphasized in Vygotsky's Social Development Theory, which underpins this study's theoretical framework. As noted in the literature review, the theory recognizes that professional development and learning occur within broader social contexts that include personal relationships and family structures (DepEd, 2019). The high percentage of married school heads suggests a workforce that balances professional responsibilities with family commitments, potentially influencing their approach to innovative programs like the DCP.

Additionally, the small percentage of single (5.32%) and widowed (4.25%) school heads highlights the relative homogeneity of the respondents' civil status, which may have implications for the diversity of perspectives in DCP implementation. The DepEd's ICT4E Strategic Plan emphasizes the value of diverse leadership perspectives in navigating the challenges of technology integration in schools (DepEd, 2018). While the respondents demonstrate diversity in other demographic variables, the predominance of one civil status category suggests the importance of intentionally seeking varied viewpoints in the planning and implementation of the DCP in Zumarraga and Daram District.

**Highest Educational Attainment.** The data reveals that a substantial majority of the respondents, 73 or 77.66 percent, have completed their Master's Degree. School heads with Doctorate Units constitute 15 or 15.96 percent of the respondents, while those with Master's Units represent the smallest group with 6 or 6.38 percent. This distribution demonstrates a relatively high level of educational qualification among school administrators in the study area, with all respondents having pursued graduate education beyond their bachelor's degrees.

**Length of Administrative Service.** The data reveals that the majority of the respondents, 55 or 58.51 percent, have served in administrative positions for 10-19 years. A substantial portion, 34 or 36.17 percent, have extensive administrative experience of 20 years and above, while only a small fraction, 5 or 5.32 percent, have less than 10 years of administrative service. The overall mean length of administrative service is 16.82 years with a standard deviation of 5.43, indicating that most school heads in the study area possess considerable administrative experience with moderate variation among the group.

**Number of Relevant Trainings and Seminars Attended.** The data reveals that the largest proportion of respondents, 36 or 38.30 percent, have attended national-level trainings and seminars relevant to school administration and ICT integration. This is followed by 31 or 32.98 percent who have participated in regional-level professional development activities, while 27 or 28.72 percent have attended division-level trainings and seminars. The overall mean number of relevant trainings attended is 7.62 with a standard deviation of 2.84, indicating that most school heads have participated in a moderate number of professional development activities with some variation among the group.

### **Implementation of DepEd Computerization Program**

Tables 8 to 11 show the extent of implementation of DepEd Computerization Program (DCP) as perceived by school heads in terms of infrastructure, integration of ICT to the school system, raising the ICT literacy of the learners, and monitoring and evaluation.

**Infrastructure.** The overall mean of 3.78 with a standard deviation of 0.53 indicates that the implementation of DCP infrastructure is perceived to be "To a Large Extent" across the participating schools, though with notable variations across specific indicators. The data reveals a highly uneven implementation of different infrastructure components. School heads rated two indicators at "To a Very Large Extent" with identical means of 4.96 and standard deviations of 0.20: the maintenance and upgrading of computer laboratories and ICT facilities (indicator 2), and the sufficiency of school infrastructure including electrical capacity and security measures (indicator 5). These high ratings suggest that schools have prioritized the physical readiness of facilities to house ICT equipment and have established effective maintenance protocols to preserve existing resources.

Regarding the provision of computer units and peripherals through the DCP (indicator 1), respondents rated this "To a Large Extent" with a mean of 4.09 and a standard deviation of 0.98. The relatively higher standard deviation for this indicator suggests more variability in the distribution of hardware resources across schools in the district. Similarly, the provision of adequate technical support and maintenance services (indicator 4) was rated "To a Large Extent" with a mean of 3.74 and a standard deviation of 0.73, indicating that while technical support is generally available, its consistency may vary across schools.

The most critical infrastructure gap appears in internet connectivity (indicator 3), which received a rating of "Not at All" with a mean of 1.16 and a standard deviation of 0.52. This exceptionally low rating identifies reliable internet connectivity as the most significant infrastructure limitation in implementing the DCP across Zumarraga and Daram District, potentially undermining the effectiveness of other well-established infrastructure components.

DepEd Order No. 78, s. 2018 outlines a comprehensive approach to the DCP implementation, emphasizing the interdependence of various infrastructure components. The findings suggest that while schools in Zumarraga and Daram District have made significant

progress in establishing and maintaining physical infrastructure, the fundamental challenge of connectivity remains largely unaddressed. As the DepEd's ICT4E Strategic Plan notes, this pattern reflects the "last mile" challenge in educational technology implementation, where the final connectivity component often proves the most difficult to establish, particularly in geographically isolated areas (DepEd, 2018).

**Integration of ICT to the School System.** The overall mean of 4.29 with a standard deviation of 0.44 indicates that the integration of ICT into the school system is implemented "To a Large Extent" across the participating schools, though with notable variations across specific indicators.

**Raising the ICT Literacy of the Learners.** The overall mean of 4.27 with a standard deviation of 0.42 indicates that the implementation in this dimension is perceived to be "To a Large Extent" across the participating schools, demonstrating substantial progress in developing students' technological competencies. The data reveals that two indicators were rated "To a Very Large Extent": the improvement of students' ability to use computers and digital tools for learning activities (indicator 1) with a mean of 4.71 and standard deviation of 0.53; and students' proficiency in basic ICT skills such as word processing, spreadsheet use, and internet research (indicator 2) with a mean of 4.63 and standard deviation of 0.69. These high ratings suggest that the DCP has been particularly effective in developing fundamental technological skills among learners.

**Monitoring and Evaluation.** The overall mean of 4.92 with a standard deviation of 0.27 indicates that the monitoring and evaluation aspects of the DCP are implemented "To a Very Large Extent" across the participating schools, demonstrating exceptionally strong institutional practices in tracking, assessing, and improving program implementation.

### **Relationship between the Extent of DCP Implementation as Perceived by the Respondents and their Profile**

**Age.** The data reveals that there is no significant relationship between the age of school heads and their perceived implementation of the DepEd Computerization Program in terms of infrastructure ( $r = 0.083$ ,  $p = 0.427$ ), integration of ICT to the school system ( $r = 0.095$ ,  $p = 0.362$ ), raising the ICT literacy of the learners ( $r = 0.104$ ,  $p = 0.318$ ), and monitoring and evaluation ( $r = 0.076$ ,  $p = 0.467$ ). These consistently low correlation coefficients and non-significant p-values indicate that the age of school heads does not substantially influence their perception of DCP implementation across all measured dimensions.

This finding has important implications for capacity-building programs aimed at enhancing DCP implementation. The Digital Infrastructure Enhancement Program guidelines suggest that professional development approaches should be differentiated based on identified needs rather than on demographic assumptions (DepEd, 2017). The absence of age-related differences in implementation perceptions suggests that capacity-building initiatives can be designed around

common implementation challenges rather than targeting specific age groups, potentially enhancing the efficiency and effectiveness of professional development resources.

**Length of Administrative Service.** The data reveals no significant relationship between years of administrative experience and perceived implementation across all four dimensions: infrastructure ( $r = 0.092$ ,  $p = 0.378$ ), integration of ICT to the school system ( $r = 0.108$ ,  $p = 0.301$ ), raising the ICT literacy of the learners ( $r = 0.115$ ,  $p = 0.270$ ), and monitoring and evaluation ( $r = 0.088$ ,  $p = 0.399$ ). These consistently low correlation coefficients and non-significant p-values indicate that administrative experience does not substantially influence school heads' perceptions of DCP implementation.

This finding has important implications for succession planning and leadership development in educational technology programs. The DepEd's ICT4E Strategic Plan emphasizes the importance of developing technology leadership capacity across all experience levels to ensure program sustainability (DepEd, 2018). The absence of significant correlation between administrative experience and perceived implementation suggests that newer administrators can potentially be as effective in DCP implementation as their more experienced colleagues when provided with appropriate preparation and support.

**Number of Relevant Trainings and Seminars Attended.** Unlike age and administrative experience, this variable shows significant relationships with three of the four implementation dimensions. While there is no significant relationship with infrastructure ( $r = 0.197$ ,  $p = 0.057$ ), there are significant correlations with integration of ICT to the school system ( $r = 0.286$ ,  $p = 0.005$ ), raising the ICT literacy of the learners ( $r = 0.243$ ,  $p = 0.018$ ), and monitoring and evaluation ( $r = 0.217$ ,  $p = 0.036$ ). The relationship with ICT integration is particularly notable as it is highly significant at the 0.01 level.

These findings indicate that school heads who have attended more relevant trainings and seminars tend to perceive higher levels of DCP implementation in the pedagogical and management dimensions of the program, though not necessarily in the infrastructure dimension. This pattern aligns with the Technology Acceptance Model (TAM) referenced in the conceptual framework, which suggests that professional development enhances perceived usefulness and ease of use of technology, potentially influencing implementation perceptions. The stronger correlation with ICT integration ( $r = 0.286$ ) compared to other dimensions suggests that professional development has a particularly notable impact on perceptions of how technology is incorporated into teaching and learning processes.

The significant relationships between professional development and perceived implementation in the pedagogical and management dimensions align with the capacity-building approach outlined in the National ICT Competency Standards for Teachers, which emphasizes that effective technology integration requires specific competencies that are developed through targeted professional learning opportunities (DepEd, 2016). The findings suggest that investments

in professional development are associated with enhanced perceptions of implementation, particularly in dimensions that depend heavily on human capacity rather than physical resources.

The absence of a significant relationship between professional development and perceived infrastructure implementation ( $r = 0.197$ ,  $p = 0.057$ ), while approaching significance, suggests that physical resource constraints may limit the impact of enhanced leadership capacity in this dimension. As the Digital Infrastructure Enhancement Program guidelines acknowledge, even well-prepared leaders face challenges in infrastructure implementation when confronted with resource limitations and technical constraints beyond their control (DepEd, 2017). The findings suggest that while professional development enhances overall implementation capacity, its impact may be moderated by resource availability in the infrastructure dimension.

**Sex.** The data consistently shows no significant relationship between the sex of school heads and their perceptions of implementation in any dimension: infrastructure ( $r = 0.073$ ,  $p = 0.483$ ), integration of ICT to the school system ( $r = 0.068$ ,  $p = 0.513$ ), raising the ICT literacy of the learners ( $r = 0.082$ ,  $p = 0.431$ ), and monitoring and evaluation ( $r = 0.065$ ,  $p = 0.534$ ). These uniformly low correlation coefficients and non-significant p-values indicate that gender does not significantly influence how school heads perceive the implementation of the DepEd Computerization Program in Zumarraga and Daram District.

The consistently low correlation coefficients across all implementation dimensions further reinforce the conclusion that gender does not substantially influence how school heads perceive or approach DCP implementation in Zumarraga and Daram District. This pattern aligns with contemporary educational leadership research reflected in the literature review, which increasingly emphasizes that leadership effectiveness depends more on developed competencies, institutional support, and resource availability than on demographic characteristics such as gender. The findings suggest that the Department of Education's gender-inclusive approach to leadership development has contributed to relatively consistent implementation perspectives among male and female school heads in the study area.

**Civil Status.** The data reveals no significant relationship between civil status and perceptions of implementation in any dimension: infrastructure ( $r = 0.112$ ,  $p = 0.565$ ), integration of ICT to the school system ( $r = 0.118$ ,  $p = 0.521$ ), raising the ICT literacy of the learners ( $r = 0.107$ ,  $p = 0.589$ ), and monitoring and evaluation ( $r = 0.093$ ,  $p = 0.671$ ). These consistently low correlation coefficients and non-significant p-values indicate that the civil status of school heads does not substantially influence their perception of DCP implementation across all measured dimensions.

From the perspective of Vygotsky's Social Development Theory that frames this study, professional development occurs through social interactions in professional contexts rather than being substantially influenced by personal circumstances such as civil status. The Five-Year Information and Communication Technology Harmonization Initiative (FITHI) acknowledges that

while personal circumstances may create different contexts for professional engagement, effective capacity-building approaches can ensure consistent leadership development regardless of civil status (DepEd, 2019). The findings support this perspective, suggesting that the Department's professional development efforts have contributed to relatively uniform implementation perceptions across different civil status groups.

The lack of civil status-related correlation also relates to the Technology Acceptance Model (TAM) referenced in the conceptual framework. While personal circumstances might theoretically influence availability for technology engagement and professional development, the data suggests that such differences do not significantly impact school heads' perceptions of DCP implementation in Zumarraga and Daram District. This finding supports the inclusive leadership development approach outlined in the National ICT Competency Standards for Teachers, which emphasizes competency-based professional development rather than differentiated interventions based on personal characteristics (DepEd, 2016).

This finding has important implications for capacity-building programs aimed at enhancing DCP implementation. The Philippine Professional Standards for School Heads (PPSSH) emphasizes that effective school leadership depends on professional competencies that can be developed regardless of personal circumstances (DepEd, 2019). The absence of significant civil status-related differences in implementation perceptions suggests that capacity-building initiatives should continue to focus on common professional challenges rather than assuming different needs based on civil status, potentially enhancing the efficiency and effectiveness of professional development resources.

**Highest Educational Attainment.** The data reveals a mixed pattern of relationships across the four implementation dimensions. There is a significant relationship between educational attainment and perception of integration of ICT to the school system ( $r = 0.226$ ,  $p = 0.033$ ), indicating that school heads with higher educational qualifications tend to perceive greater implementation in this dimension. However, there are no significant relationships between educational attainment and perceptions of implementation in the other three dimensions: infrastructure ( $r = 0.147$ ,  $p = 0.342$ ), raising the ICT literacy of the learners ( $r = 0.182$ ,  $p = 0.149$ ), and monitoring and evaluation ( $r = 0.159$ ,  $p = 0.252$ ).

This selective pattern of significance suggests that educational attainment particularly influences how school heads perceive the pedagogical integration of technology into teaching and learning processes, while having less impact on perceptions of other implementation dimensions. This finding aligns with the educational perspective emphasized in the Technology Integration Matrix (TIM) referenced in the study, which highlights that advanced academic preparation enhances leaders' capacity to recognize and support pedagogical applications of technology (DepEd, 2017). The significant relationship with ICT integration perceptions suggests that higher educational qualifications may enhance school heads' ability to conceptualize and recognize effective technology integration in instructional contexts.

The absence of significant relationships with the other three implementation dimensions suggests that educational attainment has a selective rather than general influence on implementation perceptions. The Digital Infrastructure Enhancement Program guidelines acknowledge that while advanced academic preparation enhances conceptual understanding, perceptions of infrastructure, student outcomes, and management processes may be more influenced by direct experience and specific professional development rather than general academic qualifications (DepEd, 2017). The findings support this nuanced perspective, suggesting that educational attainment has a particularly notable influence on the dimension most closely aligned with pedagogical theory and instructional design.

This finding has important implications for leadership development in educational technology programs. The Philippine Professional Standards for School Heads (PPSSH) emphasizes continuous professional learning, including advanced academic qualifications, as an important component of developing leadership capacity (DepEd, 2019). The significant relationship between educational attainment and ICT integration perceptions suggests that encouraging advanced academic pursuits among school heads may particularly enhance their capacity to lead the pedagogical dimensions of technology implementation, though additional targeted professional development may be needed to similarly enhance capacity in other implementation dimensions.

### **Challenges Encountered in Implementing the DCP**

The challenges are ranked according to frequency, representing the number of respondents who identified each challenge as a significant obstacle to effective DCP implementation. The data reveals that limited internet connectivity stands as the most pervasive challenge, identified by all 94 respondents, followed by insufficient technical support and maintenance (87 respondents), and inadequate number of computer units for students (83 respondents). These top three challenges highlight the persistent infrastructure and resource limitations that constrain effective technology integration in the district.

The middle-ranked challenges focus on human and instructional factors, including limited teacher training on ICT integration (76 respondents), outdated hardware and software (72 respondents), inadequate electrical infrastructure (65 respondents), and lack of digital learning resources aligned with curriculum (58 respondents). The lowest-ranked challenges, though still substantial, include limited instructional time for technology integration (53 respondents), resistant attitudes of some teachers toward technology (42 respondents), and inadequate security measures for ICT equipment (36 respondents).

This ranking of challenges aligns with the findings from the implementation assessment, particularly the extremely low rating for internet connectivity in the infrastructure dimension. The Five-Year Information and Communication Technology Harmonization Initiative (FITHI) acknowledges that internet connectivity remains a persistent challenge in many Philippine schools,

particularly in geographically isolated and disadvantaged areas like island municipalities (DepEd, 2019). The unanimous identification of connectivity as the primary challenge in Zumarraga and Daram District reflects the broader national context where internet access continues to lag in remote areas despite improvements in other infrastructure components.

The second-ranked challenge of insufficient technical support and maintenance relates to the sustainability concerns highlighted in the Digital Infrastructure Enhancement Program guidelines, which emphasize that technology resources require ongoing technical support to maintain functionality (DepEd, 2017). Despite the high ratings for monitoring of equipment status in the implementation assessment, the identification of technical support as a major challenge suggests that while schools are effectively monitoring their equipment, they may lack the resources and expertise to address identified issues promptly.

The third-ranked challenge of inadequate computer units for students directly relates to the moderate rating for student access to ICT resources in the implementation assessment. The National ICT Competency Standards for Teachers recognizes that effective technology integration requires sufficient access to resources for all learners, with the typical student-to-computer ratio in Philippine public schools often falling short of optimal levels (DepEd, 2016). This challenge highlights the resource constraints that limit the educational impact of the DCP despite strong institutional commitment to the program.

From the perspective of Vygotsky's Social Development Theory that frames this study, these infrastructure and resource challenges directly impact the learning environment and the availability of technological tools that mediate the learning process. The DepEd's ICT4E Strategic Plan acknowledges that the educational potential of technology can only be realized when students have adequate access to functional resources in supportive learning environments (DepEd, 2018). The high ranking of infrastructure and resource challenges suggests that in Zumarraga and Daram District, the fundamental conditions for technology-enhanced learning remain incompletely established despite significant progress in other implementation dimensions.

The fourth-ranked challenge of limited teacher training on ICT integration seems somewhat inconsistent with the high ratings for teacher training in the implementation assessment. This apparent contradiction may reflect the distinction between the quantity and quality of training, or between general availability and individual access to professional development opportunities. The Technology Integration Matrix (TIM) referenced in the conceptual framework emphasizes that effective technology integration requires ongoing, job-embedded professional development rather than occasional training sessions (DepEd, 2017). The identification of teacher training as a significant challenge despite high implementation ratings suggests that current professional development approaches may be insufficient to fully develop the complex competencies required for effective technology integration.

The middle-ranked challenges of outdated hardware/software, inadequate electrical infrastructure, and lack of aligned digital resources highlight the multifaceted nature of technology integration, requiring not just equipment but an ecosystem of supportive conditions. The Philippine Professional Standards for School Heads (PPSSH) emphasizes that effective technology leadership requires addressing this full spectrum of implementation factors rather than focusing solely on equipment provision (DepEd, 2019). The diverse challenges identified by respondents reflect this comprehensive understanding of technology integration, suggesting that school heads in Zumarraga and Daram District recognize the systemic nature of effective implementation.

The lower-ranked challenges related to instructional time, teacher attitudes, and security measures, while identified by fewer respondents, still represent significant concerns for many schools. The Technology Acceptance Model (TAM) referenced in the conceptual framework acknowledges that factors such as perceived usefulness and ease of use, influenced by attitudes and time constraints, significantly impact technology adoption (DepEd, 2016). The relatively lower ranking of these challenges compared to infrastructure issues suggests that in Zumarraga and Daram District, the primary barriers to effective DCP implementation are resource-related rather than attitudinal or organizational, though these secondary factors still warrant attention in comprehensive improvement efforts.

The overall pattern of challenges suggests a multi-tiered implementation environment where fundamental infrastructure issues must be addressed before the full educational potential of the DCP can be realized. As the Five-Year Information and Communication Technology Harmonization Initiative (FITHI) emphasizes, technology integration follows a developmental trajectory where basic infrastructure and resource needs must be satisfied before more sophisticated pedagogical applications can flourish (DepEd, 2019). The challenges identified by school heads in Zumarraga and Daram District reflect this developmental perspective, suggesting that while significant progress has been made in establishing supportive institutional conditions for technology integration, persistent resource limitations continue to constrain the educational impact of the program.

The identification of these challenges has important implications for capacity-building efforts aimed at enhancing DCP implementation. The Digital Infrastructure Enhancement Program guidelines suggest that improvement strategies should address the most critical barriers to effective implementation, with particular attention to foundational issues that constrain progress in other dimensions (DepEd, 2017). The clear prioritization of challenges identified by school heads in Zumarraga and Daram District provides a valuable roadmap for targeted interventions, suggesting that connectivity, technical support, and equipment availability represent the most pressing needs for enhancing program effectiveness in the study area.

**Summary of Findings.** The salient findings of the study are summarized as follows:

1. The profile of school heads in Zumarraga and Daram District revealed a predominantly middle-aged workforce with a mean age of 48.23 years ( $SD=6.47$ ), with the largest group (43.62%) falling in the 49-55 years old category. Gender distribution showed a slight female predominance (53.19%) over males (46.81%). Civil status was predominantly married (90.43%), with minimal representation of single (5.32%) and widowed (4.25%) school heads. Educational attainment was concentrated at the Master's Degree level (77.66%), with smaller proportions having Doctorate Units (15.96%) and Master's Units (6.38%). Administrative experience was substantial, with a mean of 16.82 years ( $SD=5.43$ ), predominantly distributed in the 10-19 years range (58.51%). Professional development participation showed balanced distribution across national (38.30%), regional (32.98%), and division (28.72%) levels, with a mean of 7.62 trainings attended ( $SD=2.84$ ).
2. The implementation of the DepEd Computerization Program was rated "To a Large Extent" in three dimensions: Infrastructure ( $M=3.78$ ,  $SD=0.53$ ), Integration of ICT to the School System ( $M=4.29$ ,  $SD=0.44$ ), and Raising the ICT Literacy of the Learners ( $M=4.27$ ,  $SD=0.42$ ); and "To a Very Large Extent" in Monitoring and Evaluation ( $M=4.92$ ,  $SD=0.27$ ). The most significant implementation gap was in internet connectivity ( $M=1.16$ ,  $SD=0.52$ ), rated as "Not at All" implemented, while physical infrastructure, maintenance, and monitoring systems were rated exceptionally high.
3. There were no significant relationships between most demographic variables (age, sex, civil status, length of administrative service) and DCP implementation. However, significant positive correlations were found between the number of relevant trainings and seminars attended and three implementation dimensions: Integration of ICT to the School System ( $r=0.286$ ,  $p=0.005$ ), Raising the ICT Literacy of the Learners ( $r=0.243$ ,  $p=0.018$ ), and Monitoring and Evaluation ( $r=0.217$ ,  $p=0.036$ ). Additionally, educational attainment showed a significant relationship with Integration of ICT to the School System ( $r=0.226$ ,  $p=0.033$ ).
4. The challenges encountered in implementing the DCP were predominantly infrastructure-related, with limited internet connectivity being the most pervasive (identified by all 94 respondents), followed by insufficient technical support and maintenance (87 respondents), and inadequate number of computer units for students (83 respondents). Other significant challenges included limited teacher training on ICT integration (76 respondents), outdated hardware and software (72 respondents), and inadequate electrical infrastructure (65 respondents).

#### IV. Conclusion

1. The demographic profile of school heads in Zumarraga and Daram District reveals a mature, highly educated, and experienced administrative workforce with substantial professional development exposure but varied technological preparation. This profile suggests a leadership cadre with strong educational foundations and administrative experience, though potentially requiring targeted capacity building in technology leadership given their relatively advanced age and formation in pre-digital educational environments.
2. The implementation of the DepEd Computerization Program demonstrates uneven development across dimensions, with exceptionally strong monitoring and evaluation systems contrasting with severe connectivity limitations. This implementation pattern reflects a common developmental trajectory in technology integration, where organizational and management systems develop more rapidly than infrastructure components, particularly in geographically isolated areas where connectivity presents persistent challenges as highlighted in the Five-Year Information and Communication Technology Harmonization Initiative (DepEd, 2019).
3. The relationship between professional development and implementation effectiveness, particularly in pedagogical and management dimensions, validates the capacity-building approach emphasized in the DepEd's ICT4E Strategic Plan (DepEd, 2018). The absence of significant relationships between most demographic factors and implementation perceptions suggests that professional preparation, rather than personal characteristics, most significantly influences technology leadership effectiveness, aligning with the competency-based approach outlined in the National ICT Competency Standards for Teachers (DepEd, 2016).
4. The challenges in DCP implementation reflect a multi-tiered environment where fundamental infrastructure issues, particularly connectivity, technical support, and equipment availability, must be addressed before the full educational potential of technology integration can be realized. This pattern aligns with the Digital Infrastructure Enhancement Program guidelines (DepEd, 2017), which emphasize that technology integration follows a developmental trajectory requiring fundamental infrastructure foundations before advanced pedagogical applications can flourish.

#### V. Recommendations

1. The Schools Division of Samar should establish a comprehensive capacity-building program for school heads focusing on technology leadership, with particular emphasis on connectivity solutions and resource optimization strategies. This program should address the significant gap between organizational readiness and infrastructure limitations, with
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specialized components for school heads with limited technology-specific professional development despite their substantial general administrative experience.

2. The Division, in collaboration with local government units and telecommunications providers, should implement a strategic connectivity initiative prioritizing schools in Zumarraga and Daram District, addressing the most critical implementation gap identified in the study. This initiative should explore alternative connectivity solutions suitable for island municipalities, potentially including satellite internet, community WiFi networks, or localized content servers that can function with limited connectivity, as suggested in the DepEd's ICT4E Strategic Plan (DepEd, 2018).
3. School administrators should establish professional learning communities focused on technology integration, enabling resource optimization, collaborative problem-solving, and knowledge sharing related to DCP implementation. These communities should leverage the experience of school heads with extensive professional development while supporting those with more limited training experience, with particular attention to pedagogical applications of available technology resources despite infrastructure limitations.
4. The Department of Education should develop specialized resources and technical support systems for schools in geographically isolated and disadvantaged areas, addressing the specific challenges of DCP implementation in these contexts. These resources should emphasize innovative approaches to technology integration in connectivity-challenged environments and include technical maintenance protocols to extend the useful life of available equipment, aligning with the Digital Infrastructure Enhancement Program guidelines (DepEd, 2017) that emphasize contextually responsive implementation strategies.

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