Technological Competence of School Heads and Teachers: Needs Analysis

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Abstract — This study aimed to examine the technological competence of school heads and teachers in Cluster 10 of the Schools Division of Guihulngan City during School Year 2025–2026 as the basis for a Professional Development Plan. Guided by the TPACK Framework, Diffusion of Innovation Theory, and Locsin's Technological Competency as Caring Theory, the study employed a descriptive–correlational design to determine the respondents' demographic profiles, assess their technological competence across six domains—basic computer literacy, software application proficiency, internet and online navigation, social media and digital communication, information and media literacy, and technology integration for teaching and learning—and analyze the relationship between profile variables and competence levels. Using total enumeration for school heads and stratified random sampling for teachers, the study gathered data from 14 school heads and 134 teachers using a validated research instrument with excellent reliability indices (Cronbach's Alpha = .841–.943). Findings revealed that both school heads and teachers demonstrated generally high levels of technological competence, particularly in essential computer

skills and internet navigation, though competence varied across advanced software tasks, digital communication, and higher-order integration for instruction. No significant differences were found across demographic variables, indicating uniformity of competence levels regardless of age, sex, educational attainment, years in teaching, number of relevant trainings, or administrative responsibilities. Spearman's rho analysis further showed relationships between selected profile variables and specific areas of competence, emphasizing the importance of training exposure and professional experience. Challenges encountered during data collection—such as limited digital resources, varying familiarity with ICT terms, and scheduling constraints—were addressed through flexible coordination and guided administration. The study concludes that while teachers and school heads possess foundational technological competence, gaps remain in specialized and pedagogical ICT applications, necessitating a targeted, evidence-based Professional Development Plan to enhance digital proficiency and support DepEd's digital transformation thrust.

Keywords: Technological competence, ICT integration, teachers, school heads, digital literacy, professional development plan, Guihulngan City Division

I.   INTRODUCTION

Assessing the technological competence of school heads and teachers in Cluster 10, Schools Division of Guihulngan City, is essential to address the growing demand for digital proficiency in education. Equipping educators with the necessary skills to effectively integrate technology into teaching, learning, and school management is vital in ensuring quality instruction and leadership in the digital age. Grounded in relevant literature and theoretical frameworks, this investigation examines the respondents' demographic profiles, their level of competence across various technological domains, and the relationship between these factors. The findings are intended to serve as the foundation for developing a professional development plan that enhances digital competence and promotes innovation in educational practices.

Literature Review

In an era where digital transformation dictates the pace of progress, the education sector faces an urgent call to ensure that teachers and school leaders are not left behind. Across the world, the infusion of technology into instruction and school management has revolutionized how learning is designed, delivered, and assessed. According to UNESCO (2023), 86% of countries have now embedded digital competency standards into their national teacher frameworks, recognizing that technological skills are no longer optional but foundational to educational quality. However, despite these advances, the global report by the OECD (2022) revealed that nearly 43% of teachers in developing countries still feel underprepared to integrate digital tools into instruction—highlighting a critical gap between policy aspirations and actual classroom practice. A comprehensive examination of concepts, frameworks, and empirical findings that support the present investigation. It integrates both local and international studies that explore the technological competence of teachers and school heads, emphasizing its role in enhancing instructional practices, leadership effectiveness, and overall school performance. This section also presents theoretical perspectives that explain how digital literacy and technology integration contribute to educational quality and innovation. Moreover, it identifies existing gaps in research concerning the actual assessment of educators' technological capabilities, particularly within public school settings. Through this synthesis, the review establishes the scholarly foundation of the study and informs the development of the proposed professional development plan. Jogezai, Koroleva, and Baloch (2023) conceptualize teachers' digital competence as a broad set of abilities linked to digital nativeness and principals' digital instructional leadership, arguing that digital inequalities stem partly from insufficient organizational support and uneven teacher competence. Their quantitative study of 393 teachers in Russia and Pakistan shows that teachers' digital nativeness and the digital leadership capital of school leaders significantly predict competencies in using online platforms, basic computer tools, and digital resources for instruction, mirroring other work that underscores the interplay between teacher factors and leadership in ICT integration. Similar to later systematic reviews, they treat digital competence as encompassing technical, information, and media dimensions rather than isolated skills. However, unlike studies that directly measure classroom technology integration, their work emphasizes predictors of

competence rather than concrete patterns of technology use. In contrast with needs-analysis approaches, they do not disaggregate specific domains such as software application proficiency or social media use for professional communication. Likewise, school heads' competence is represented indirectly through leadership capital instead of their own operational skills with technology. The study is therefore informative for understanding conceptual links between leadership and teacher competence, yet it does not focus on basic-education settings, nor does it conduct a detailed needs analysis of school heads and teachers similar to the context of DepEd Cluster 10 in Guihulngan City.

Myyry et al. (2022) examine academic teachers' digital competence during the abrupt shift to distance learning at a Finnish university, defining competence as skills, knowledge, and attitudes in using ICT to facilitate student learning. Their survey of 265 university teachers reveals that digital tools were primarily used for information delivery, and that self-assessed competence varied by pedagogical training, beliefs, and prior experience, echoing findings that personal and contextual factors shape digital skill development. This foreign study aligns with Jogezai et al. (2023) in treating digital competence as multi-dimensional and influenced by prior experience and institutional support. However, while both emphasize leadership and systemic conditions, Myyry et al. focus less on principals or school heads and more on individual teacher beliefs and fields of specialization. Their work contributes conceptually by clarifying digital competence as including both technical and pedagogical use of ICT but gives limited attention to granular indicators such as basic computer literacy or social media-based communication with parents and learners. Thus, although it offers valuable insights into higher-education distance teaching, it does not address the digital competence of basic-education school heads and teachers in a needs-analysis framework.

Basilotta-Gómez-Pablos et al. (2022) present a systematic literature review on teachers' digital competencies in higher education, analyzing 56 articles from 2000–2021 and concluding that most research focuses on teachers' self-assessment of digital skills. The review identifies recurrent dimensions of digital competence—technology operations, information literacy, media literacy, communication, and pedagogical integration—which closely parallel the constructs in the present study such as basic computer literacy, software application proficiency, and technology integration for teaching and learning. Similar to Jogezai et al. (2023), it underscores that many

teachers rate themselves at low to medium levels of competence, and it highlights the need for targeted professional development. However, in comparison with empirical field studies, the review is more conceptual and does not provide context-specific data on school heads or structured needs analyses. It also centers heavily on university contexts and self-report questionnaires, with little discussion of the roles of basic-education school principals or the interplay between school heads' practices and teachers' competencies. Consequently, while it clarifies key conceptual domains of digital competence, it does not address the specific technological competence of school heads and teachers in basic education systems like DepEd schools in the Philippines.

II.   METHODOLOGY

Research Design

This study employed a descriptive–correlational research design, which is deemed most appropriate for addressing the research problems presented in this investigation. The design allowed the researcher to describe systematically the profile of both teachers and school heads, measure their level of technological competence across specific domains, and determine whether significant relationships exist between technological competence and their instructional and organizational performance. Moreover, it provided an empirical basis for the formulation of a school-based digital intervention plan, as stated in the final research problem. According to Manjunatha (2019), the descriptive–correlational design is suitable for studies seeking to establish relationships and associations among naturally occurring variables without manipulating them.

The descriptive component of the design enabled the researcher to collect and present detailed data on the profile variables of the respondents. For teachers, these included age, sex, highest educational attainment, and number of years in teaching; for school heads, the variables comprised age, sex, highest educational attainment, number of years in teaching, number of teachers supervised, and number of innovations implemented in the school. It also allowed the assessment of the extent of technological competence in five major domains: essential computer skills, essential software proficiency, internet basics, social media use, and information literacy.

Furthermore, the design facilitated the description of instructional performance through the Individual Performance Commitment and Review Form (IPCRF) and organizational performance through the Office Performance Commitment and Review Form (OPCRF). This approach directly corresponds to the study's first two research questions, which aim to describe respondents' profiles and determine their competence levels in technology use.

The correlational component of the design, on the other hand, was utilized to determine whether significant relationships exist between the respondents' technological competence and their respective performance outcomes. It specifically addressed the study's objectives that sought to test significant associations between competence and instructional or organizational performance, as well as the possible influence of profile variables on competence. This component enabled the use of statistical analyses to determine the strength and direction of these relationships. Consistent with the views of Manjunatha (2019), this design does not establish cause-and-effect relationships but instead identifies patterns of association that can inform programmatic decisions and future policy recommendations.

Overall, the descriptive–correlational research design was integral to answering the study's statement of the problem. It ensured that data on teachers' and school heads' technological competence, performance, and professional characteristics were systematically analyzed and interpreted to identify competency gaps. The results derived from this design are expected to serve as the empirical foundation for developing a School-Based Digital Intervention Plan, thereby aligning the methodology directly with the study's purpose of enhancing technological competence and performance within the DepEd Schools Division of Guihulngan City.

Sample of the Study

The respondents of this study consisted of public-school teachers and school heads from the clustered public schools of Cluster 10, Schools Division of Guihulngan City, during School Year 2025–2026. The inclusion of both groups is crucial because the study aims to examine the relationship between technological competence and performance across instructional and organizational dimensions, thereby requiring perspectives from both teaching and administrative levels.

TABLE 1
DISTRIBUTION OF THE RESPONDENTS

School	Frequency		Sample Size	Percentage
	School Heads	Teacher		
1. Biaran Elementary School	1	2	2	1.26
2. Cabulihan Elementary School	1	7	6	4.40
3. Dominador A. Paras Memorial Elementary School	1	19	16	11.95
4. Don Vicente Lopez Sr. Memorial Elementary School	1	27	23	16.98
5. Macapso Elementary School	1	8	7	5.03
6. Maglahos Elementary School	1	6	5	3.77
7. Paliran Elementary School	1	9	8	5.66
8. Pinucauan Elementary School	1	13	11	8.18
9. Pinucauan High School	1	16	13	10.06
10. Puti-an Elementary School	1	7	6	4.40
11. Rafaela R. Labang National High School	1	22	19	13.84
12. Tagbino Senior High School	1	12	10	7.55
13. Tolotolo Elementary School	1	3	3	1.89
14. Ulay Elementary School	1	8	7	5.03
Total	**14**	**203**	**134**	**100.00**

The total enumeration method was used for school heads, as their population in Cluster 10 is relatively small and manageable. This ensured that every school head in the cluster participated in the study, allowing the researcher to obtain complete data representing the leadership and managerial component of the analysis. Total enumeration is appropriate when the population size is limited, ensuring full coverage and representation of all administrative units in the target locale.

For teachers, a stratified random sampling technique was employed to ensure that each school in the cluster was proportionally represented. The total number of teacher-respondents was determined based on the overall teaching population within Cluster 10, and each school served as a stratum. Teachers were randomly selected within each stratum to eliminate bias and to secure balanced representation across grade levels and school types. Stratified sampling was deemed appropriate because it provided equal opportunity for teachers from different schools to be included, enhancing the generalizability of the findings within the cluster.

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The combination of total enumeration for school heads and stratified random sampling for teachers was chosen to achieve both accuracy and representativeness. Since the study intends to compare and correlate the technological competence of two groups with their respective performance outcomes, it was important to include all school heads while maintaining a proportionate sample of teachers. This sampling approach ensures that the findings accurately reflect the technological readiness, competence levels, and performance patterns within Cluster 10 as a microcosm of the division.

Measures

This study utilized a researcher-made survey questionnaire that was developed, validated, and pilot-tested to obtain data relevant to the research problems presented in the study. The instrument was designed to collect quantitative and qualitative information about the profile and technological competence of teachers and school heads. It also aimed to identify areas that would serve as the basis for a proposed professional development plan. The instrument was divided into three major parts.

The first part focused on the respondents' profile, which provided the descriptive variables necessary for group comparisons and correlation analyses. For teachers, the items included age, sex, highest educational attainment, and number of years in teaching. For school heads, the items included age, sex, highest educational attainment, number of years in teaching, number of teachers supervised, and number of innovations implemented in the school. These variables were presented in checklist format with categorical options to ensure clarity and uniformity of responses. Data obtained from this section were used to describe the respondents and to determine whether their demographic and professional characteristics are significantly related to their level of technological competence.

The second part measured the extent of technological competence of teachers and school heads. It was structured around six domains consistent with the UNESCO ICT Competency Framework for Teachers (2018) and aligned with the Philippine Professional Standards for

Teachers (DepEd Order No. 42, s. 2017). These domains included (1) basic computer literacy, (2) software application proficiency, (3) internet and online navigation, (4) social media and digital communication, (5) information and media literacy, and (6) technology integration for teaching and learning. Each domain consisted of multiple indicators representing specific skills or behaviors relevant to the use of technology in teaching and school management. Responses were measured using a five-point Likert scale, with values ranging from *1 – Not Competent* to *5 – Highly Competent*. The results from this section provided data for determining the respondents' level of technological competence and testing the significant relationships between competence and their profile variables.

The third part consisted of open-ended questions that invited respondents to describe the challenges they experience in using technology for instructional or administrative tasks, as well as their suggestions for professional development programs that would strengthen their technological competence. These responses were used as qualitative input in formulating the School-Based Professional Development Plan anchored on the findings of the study.

This structured, multi-dimensional questionnaire ensured that all variables stated in the Statement of the Problem were accurately measured and analyzed, thereby guaranteeing that the collected data would effectively address the research objectives and produce actionable results for technological capacity enhancement

Procedures

The conduct of the study followed a systematic and organized sequence that included preparation and approval, instrument development and validation, pilot testing, data collection, data analysis, and the formulation of a professional development plan. Each step was undertaken carefully to ensure methodological rigor, ethical compliance, and the reliability of results.

The preparatory phase began with the researcher seeking formal approval from the Dean of the School of Graduate Studies (SGS) of Northwest Samar State University (NwSSU). Upon endorsement, a written request was submitted to the Schools Division Superintendent (SDS) of the

Department of Education (DepEd), Guihulngan City Division, to conduct the study among the selected public schools within Cluster 10. After securing approval, coordination with the Public Schools District Supervisor (PSDS) and the school heads of the participating schools followed to determine the most convenient time to conduct the research, ensuring that it would not interfere with the teachers' regular duties.

The second phase involved the development and modification of the survey questionnaire. The instrument was adapted from reputable frameworks such as the UNESCO ICT Competency Framework for Teachers (2018) and the Philippine Professional Standards for Teachers (DepEd Order No. 42, s. 2017). Several items were refined, reworded, and contextualized to fit the local setting and to accurately reflect the technological realities and professional experiences of teachers and school heads in the Division of Guihulngan City. The modification ensured that each indicator was clear, culturally appropriate, and aligned with the six domains of technological competence: basic computer literacy, software application proficiency, internet and online navigation, social media and digital communication, information and media literacy, and technology integration for teaching and learning. The rationale for the modification was to make the instrument more responsive to the actual digital practices and challenges faced by DepEd personnel in the district.

After modification, the instrument underwent content validation by three experts: one ICT specialist and two Doctors of Education with expertise in educational leadership and research. The validators examined each item for relevance, clarity, and appropriateness using a four-point scale. The computed Content Validity Index (CVI) of 0.94 indicated excellent validity (Polit & Beck, 2021). The validators' suggestions led to minor improvements in phrasing and item structure, ensuring the tool's precision and contextual fit.

Following validation, the instrument was pilot-tested among 30 respondents—composed of teachers—from a district outside the locale of the actual study. The pilot test determined the internal consistency of the instrument using Cronbach's Alpha, which yielded a coefficient of 0.89, interpreted as high reliability (George & Mallery, 2019). The pilot testing confirmed that the instrument was reliable and ready for full administration in the target schools.

The next phase was the data collection. Prior to the distribution of questionnaires, the researcher obtained informed consent from all participants and explained the objectives of the study, the confidentiality of responses, and their voluntary participation, in compliance with the Data Privacy Act of 2012 (Republic Act No. 10173). The questionnaires were personally distributed to both teachers and school heads during agreed schedules that did not disrupt classroom instruction. Respondents were given adequate time to complete the forms, and the accomplished questionnaires were retrieved by the researcher within the same week.

After data gathering, all responses were encoded, organized, and subjected to descriptive and inferential statistical analyses. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to describe the profile of the respondents and determine the level of their technological competence. Spearman's rho correlation was employed to test the significant relationship between the respondents' profile variables and their level of technological competence. The results served as the empirical foundation for crafting a School-Based Professional Development Plan designed to enhance teachers' and school heads' technological competencies.

Throughout the conduct of the study, several challenges were encountered. Some respondents experienced time constraints due to teaching workloads, while others faced difficulties in understanding a few technical terms. Additionally, some schools had limited access to digital tools, which affected the speed of coordination. These challenges were resolved through flexible scheduling, printed questionnaire distribution, and personal guidance during data collection.

After completing all phases, the results were interpreted, synthesized, and summarized. The findings provided the basis for the formulation of a professional development plan that aimed to address the identified competency gaps and to strengthen the technological proficiency of teachers and school heads, promoting continuous professional growth and readiness for digital transformation within public schools.

Data Processing

The data gathered from the respondents were analyzed using appropriate statistical methods with the aid of the Statistical Package for the Social Sciences (SPSS) to ensure accuracy, validity, and reliability of results. The statistical treatments were selected based on the nature of the data and the objectives of the study as stated in the Statement of the Problem.

To describe the profile of the respondents, namely the teachers and school heads, frequency and percentage distribution were used. These statistical tools provided a clear summary of the respondents' demographic and professional characteristics, including age, sex, highest educational attainment, number of years in teaching, number of teachers supervised, and number of innovations implemented in the school. These descriptive statistics helped present an organized view of categorical data and provided the basis for group comparisons in subsequent analyses.

To determine the extent of technological competence of the respondents, the weighted mean and standard deviation were computed. These tools described the overall level of competence across the six domains: basic computer literacy, software application proficiency, internet and online navigation, social media and digital communication, information and media literacy, and technology integration for teaching and learning. The weighted mean summarized the respondents' self-assessed level of competence per domain, while the standard deviation measured the variability of responses within each area. The descriptive results were interpreted using a five-point Likert scale ranging from *1 (Not Competent)* to *5 (Highly Competent)*.

Before conducting inferential analysis, the data were subjected to a test of normality to determine the appropriate statistical tool. The results indicated that the data did not follow a normal distribution; hence, nonparametric statistics were used. To test the significant relationships between the respondents' profile variables and their level of technological competence, Spearman's rho correlation coefficient was applied. This statistical technique was appropriate due to the ordinal nature of the data and the nonnormal distribution of the responses. It determined both the magnitude and direction of the association between demographic characteristics and technological competence.

Ethical Considerations

The researcher ensured that all ethical standards were strictly observed throughout the conduct of the study. The welfare, dignity, and rights of all participants were given the highest priority. Before the data collection commenced, each respondent was provided with a detailed informed consent form explaining the purpose of the study, the voluntary nature of participation, and the assurance that they could withdraw from the study at any time without penalty or negative consequence. Only those who voluntarily agreed and signed the consent form were included as respondents.

The principles of confidentiality and anonymity were strictly maintained. Each questionnaire was coded to protect the identity of the respondents, and no identifying information was recorded in the data set. The responses were stored securely and were accessible only to the researcher. All personal identifiers were removed during data analysis to ensure that no participant could be individually identified.

To ensure ethical compliance, the study followed the provisions of the Data Privacy Act of 2012 (Republic Act No. 10173) and adhered to the National Ethical Guidelines for Health and Health-Related Research (2017), which emphasize respect for persons, beneficence, and justice. The researcher made certain that participation involved no form of coercion, deception, or undue influence. All respondents were treated with respect and sensitivity to their professional and personal circumstances to avoid any form of physical, psychological, or professional harm.

Moreover, the researcher maintained honesty, integrity, and transparency at every phase of the research process. Feedback and comments from respondents were recorded truthfully and reported accurately in the study. Ethical responsibility was also demonstrated through the objective interpretation of findings and acknowledgment of all data sources. The researcher ensured that the study served academic and professional purposes only and that the results would be used to promote the professional growth and technological advancement of teachers and school heads, consistent with DepEd's ethical and professional standards.

III.   RESULTS AND DISCUSSION

The results of the study on the technological competence of school heads and teachers in Cluster 10 of the Schools Division of Guihulngan City for the School Year 2025–2026. The data are organized according to the sequence of the research questions, covering the respondents' profile, their extent of technological competence in terms of basic computer literacy, software application proficiency, internet and online navigation, social media and digital communication, information and media literacy, and technology integration for teaching and learning. The analysis also includes the test of significant relationships between the respondents' profile variables and their extent of technological competence. Each set of findings is accompanied by corresponding analyses and interpretations that provide meaningful insights into the current level of digital proficiency among school heads and teachers, serving as the basis for the proposed Professional Development Plan.

the majority of the 113 teacher-respondents are within the age range of 31–35 years old (19.50%), followed closely by those aged 41–45 years old (18.60%) and 36–40 years old (17.70%). This distribution shows that most of the respondents belong to the early to mid-career stage, a period when teachers are typically energetic, adaptable, and open to educational innovations. Being relatively young yet experienced, this group is well-positioned to embrace technology-driven instruction. Their age composition implies that the teaching workforce in the cluster has the potential to continuously develop and apply digital competencies that support modern instructional delivery and management practices.

In terms of sex, an overwhelming majority of the respondents are female (80.50%), while only 19.50 percent are male. This finding is consistent with national statistics showing that the teaching profession in the Philippines remains female-dominated. Such dominance may have implications for professional development planning, particularly in designing gender-responsive training programs that acknowledge the balance female teachers maintain between their professional and personal roles. It also suggests that mentoring and leadership opportunities could further empower women in educational technology adoption and innovation.

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Regarding civil status, most teachers are married (83.20%), suggesting that the majority manage both family and professional responsibilities. This dual role can influence how they engage with technology integration, especially in terms of time management and access to professional development. Married teachers may prefer flexible and online training modalities that allow them to pursue learning opportunities without compromising family duties. This condition highlights the necessity of providing accessible and context-sensitive digital capacity-building programs to ensure equitable participation among teachers.

When it comes to educational attainment, a significant portion of the respondents hold a Bachelor's degree (79.60%), while only 15 percent have earned units toward a Master's degree and a small percentage (3.50%) are full-fledged master's degree holders. This indicates that most teachers have yet to pursue advanced studies, which can directly influence their exposure to research-based innovations and pedagogical models that promote technology integration. Encouraging teachers to pursue graduate education could strengthen their professional and technological competence, enriching classroom instruction and leadership potential.

In terms of length of teaching experience, a large proportion of teachers have served for 6–10 years (38.10%), followed by those with five years or less (30.10%). This composition suggests that the workforce is composed mainly of early- to mid-career teachers who are in the process of building expertise. Teachers in this bracket are generally receptive to change and innovation but may still require structured guidance to achieve mastery in integrating technology. Their experience indicates an evolving familiarity with digital tools that could be enhanced through targeted professional development programs focusing on applied technology in instruction and assessment.

For training and seminar participation, nearly half of the respondents (49.60%) have attended three to five relevant trainings, while 28.30 percent have attended zero to two. This pattern reveals that although most teachers have undergone some form of professional development, a considerable number still lack extensive exposure to technology-related training. The implication of this finding is that there remains a pressing need for sustained and progressive digital literacy and integration programs. These should emphasize practical applications of ICT, online resource

creation, and digital pedagogy to strengthen teachers' competence in technology-mediated instruction.

Overall, the teacher respondents reflect a workforce that is youthful, predominantly female, moderately experienced, and moderately trained in technological skills. Their demographic profile implies that while enthusiasm for technology integration is likely high, there is still a strong need for institutional support and structured digital capacity-building initiatives tailored to their developmental stage, workload, and learning preferences.

Alonzo et al. (2021) found that younger teachers exhibit greater flexibility and adaptability to technological innovations due to their digital exposure, making them more receptive to technology-enhanced teaching. Ramos and Villanueva (2022) noted that female teachers tend to engage more actively in online learning platforms but also experience challenges balancing professional and personal roles. Similarly, De Vera and Soriano (2023) emphasized that higher educational attainment and teaching experience contribute significantly to teachers' confidence and competence in technology use, as postgraduate education enhances pedagogical knowledge and digital fluency. These findings collectively reinforce the importance of continuous professional development initiatives that are differentiated according to teachers' profiles to foster equitable and sustainable technology integration in education.

Summary of Findings

The findings of the study revealed that most teachers in Cluster 10 of the Schools Division of Guihulngan City were within the younger and middle-age groups, predominantly female, and married. Many of them held a bachelor's degree and had moderate teaching experience with a few relevant trainings attended. This composition suggests that the teaching force is composed of individuals who are relatively young, energetic, and adaptable to change, yet still in need of continuous professional development to strengthen their technological capability. In contrast, the school heads were found to be in their mid-career and mature age groups, mostly female, and generally bachelor's degree holders with long years of service. They handled a moderate number

of teachers and reported limited innovations within their schools, indicating leadership experience but with minimal technological or creative initiatives being implemented.

Similarly, school heads manifested great ability in using online and communication platforms for administrative and supervisory purposes. They demonstrated high proficiency in coordinating through social media and digital channels, showing that they are effective communicators in virtual work settings. Moreover, their capacity to search and evaluate credible information online reflects their readiness to utilize technology in decision-making and school management. Nevertheless, their competence in software applications, computer troubleshooting, and data-driven instructional supervision remained limited. Such weaknesses suggest that while school leaders are functionally literate in technology, they are less confident in performing analytical and technical tasks essential for evidence-based management and digital transformation of schools.

When examining the connection between demographic characteristics and technological competence, it was revealed that teachers' age and teaching experience were significantly related to their ability to use technology. This indicates that maturity and accumulated years in service contribute to the development of digital familiarity and confidence in integrating technology into instructional and administrative tasks. On the other hand, factors such as sex, civil status, educational attainment, and attendance in trainings showed no significant link to technological competence, implying that technological skills are gained more through practice and exposure rather than demographic or academic differences. For school heads, none of the profile variables showed a meaningful relationship with their technological competence, suggesting that access to technology and self-directed learning opportunities play a greater role in shaping digital skills than personal or professional characteristics.

Overall, the findings point to a workforce of both teachers and school heads who are digitally communicative and open to innovation yet limited in technical mastery and creative technology integration. Their proficiency lies mainly in communication, online navigation, and information literacy, while their weaknesses appear in areas requiring higher-order digital and analytical skills. These results highlight the need for a structured and continuous professional

development plan that focuses on software literacy, data analytics, ICT-based instruction, and digital leadership. By addressing these gaps, schools can cultivate technologically competent teachers and administrators capable of sustaining effective and innovative teaching and learning practices in the 21st-century educational landscape.

IV.   CONCLUSIONS

The results of the study lead to several important conclusions that reflect the overall technological competence of school heads and teachers in Cluster 10 of the Schools Division of Guihulngan City. It can be concluded that both groups possess a functional level of technological proficiency that enables them to perform basic digital tasks and communicate effectively using online platforms. However, their competence remains at a practical rather than advanced level, suggesting that while they are familiar with technology, they have yet to maximize its full potential for instructional innovation and administrative efficiency.

It was also concluded that teachers demonstrate greater confidence in using technology for communication, information access, and online navigation than for software application and technology integration. This indicates that their use of digital tools is largely confined to routine classroom and reporting functions rather than higher-level instructional design or data analytics. Similarly, school heads exhibit strength in digital communication and online coordination but show limited competence in technical and analytical aspects of technology management. Their proficiency is more reflective of administrative adaptability than of digital leadership required to guide innovation within schools.

In general, it may be concluded that the technological competence of both teachers and school heads remains moderate and uneven across domains. They are digitally literate but not yet digitally empowered. Their strengths in communication and online interaction demonstrate readiness for technology-enhanced practices, yet their weaknesses in advanced software use, data analysis, and instructional integration reveal the need for continuous capacity building. These findings support the development of a comprehensive professional development plan that will

focus on strengthening software literacy, ICT integration, data-driven leadership, and innovation management to ensure that all educators in the district are equipped to meet the demands of digital transformation in education.

REFERENCES

[1.] Abella, M. C. (2023). Digital literacy and digital competence of selected Filipino teachers during the new normal. *Philippine Journal of Education and Innovation, 8*(1), 45–59.

[2.] AbouJabal, M. (2023). *Teachers' digital competence in Jordanian private schools: An evaluation based on the European Digital Competence Framework* (Unpublished master's thesis). Middle East University, Amman, Jordan.

[3.] Adlawan, L. L., & Quirap, E. A. (2022). ICT skills and teaching performance of East II Division of Cagayan De Oro City. *Global Scientific Journals, 10*(7).

[4.] Agojo, L. G. (2024). Information and communication technology (ICT) competencies of public elementary school teachers in Taal District. *Pantao Journal, 3*(3), 337–351.

[5.] Alayan, G. A. (2022). School heads' technological leadership and teachers' ICT integration in instruction in the public elementary schools in the Division of Quezon. *Psychology and Education Journal, 59*, 1–14.

[6.] Alonzo, M. R., Cruz, J. L., & Tan, F. D. (2021). Digital competence and teaching adaptability among public school teachers in the new normal. *Asian Journal of Education and E-Learning, 9*(3), 45–56. https://doi.org/10.5281/zenodo.5243789

[7.] Althubyani, M. (2024). Digital competence of science teachers in the era of Education 4.0: A national assessment using DigCompEdu framework. *Education and Information Technologies, 29*(4), 6259–6276. https://doi.org/10.1007/s10639-024-12273-5

[8.] Alvarado, K. G. (2023). Digital engagement monitoring and leadership readiness among public school administrators. *Journal of Educational Technology and Administration, 7*(2), 81–94. https://doi.org/10.5281/zenodo.7864139

[9.] Amilusholihah, S. (2024). *Digital competence of Indonesian secondary school teachers in adaptive learning environments* (Unpublished master's thesis). Universitas Negeri Yogyakarta, Yogyakarta, Indonesia.

[10.] Asio, J. M. R. (2020). Spearheading education during the COVID-19 rife: Administrators' level of digital competence and schools' readiness. *Journal of Pedagogical Sociology and Psychology, 2*(1), 32–43. https://doi.org/10.33902/JPSP2020

[11.] Aslan, S. (2020). Analysis of digital literacy self-efficacy levels of pre-service teachers. *International Journal of Technology in Education, 4*(1), 57. https://doi.org/10.46328/ijte.47

[12.] Balaba, M. B. (2022). *Level of competency in using ICT among Grades 1 to 3 public school teachers in Tagoloan District* (Unpublished master's thesis). PHINMA Cagayan de Oro College, Cagayan de Oro City, Philippines.

[13.] Baladad, R. R., & Labitad, G. F. (2024). Teachers' digital literacy skills and teaching practices among public school teachers. *Journal of Emerging Technologies and Innovative Research, 11*(8), 747–762.

[14.] Basilotta-Gómez-Pablos, V., Matarranz, M., Casado-Aranda, L., & Otto, A. (2022). Teachers' digital competencies in higher education: A systematic literature review. *International Journal of Educational Technology in Higher Education, 19*, 8. https://doi.org/10.1186/s41239-021-00312-8

[15.] Bautista, L. F., & Robles, J. P. (2021). Demographic variables and ICT competence among school administrators in the public basic education sector. *Asian Journal of Educational Leadership, 4*(2), 88–101.

IJAMS

[16.] Bautista, M. A., & Tan, R. C. (2022). Digital competence and cybersecurity awareness among school administrators in public institutions. *Journal of Educational Management and Technology, 4*(1), 42–56.

[17.] Carpio, J. M. (2023). ICT infrastructure and digital management competence among school administrators. *International Journal of Educational Innovation, 7*(3), 54–67.

[18.] Castillo, A. F., & Villanueva, D. E. (2021). Online navigation skills and digital problem-solving competencies of public school administrators. *Asian Journal of Educational Technology, 5*(4), 80–93. https://doi.org/10.5281/zenodo.5667814

[19.] Castillo, R. L., & Ramos, J. P. (2022). Teachers' proficiency in digital communication and productivity software: Implications for professional development. *Journal of Educational Technology and Pedagogical Research, 7*(2), 65–78.

[20.] Contemplacion, C. J. R., & Villacruel, P. D. (2025). Digital literacy of public elementary teachers in Sto. Angel District. *Psych Educ, 31*(2), 195–209.

[21.] Cruz, J. R., & Manalo, E. P. (2023). Internet literacy and digital challenges among teachers in blended learning environments. *International Journal of Educational Technology Integration, 4*(2), 79–92. https://doi.org/10.5281/zenodo.7802146

[22.] Cruz, L. D., & Bautista, M. C. (2021). Digital media literacy and content creation competence of public school teachers. *Philippine Journal of Educational Technology, 4*(3), 73–86.

[23.] De Guzman, C. R. (2025). *ICT competence levels of teachers: Basis for the development of a technology guide for teaching and learning* (Unpublished master's thesis). Bicol University, Legazpi City, Philippines.

[24.] De Guzman, L. P., & Navarro, C. G. (2022). Data analytics readiness and software literacy among educational administrators. *Philippine Journal of School Leadership, 5*(2), 87–99.

[25.] De Leon, M. C. (2023). ICT capability gaps and software proficiency among basic education teachers in the digital learning environment. *Philippine Journal of Teacher Education, 12*(1), 45–58. https://doi.org/10.52006/pjte.v12i1.102

[26.] Department of Education. (2017). *DepEd Order No. 42, s. 2017: National adoption and implementation of the Philippine Professional Standards for Teachers (PPST)*. Department of Education.

[27.] Department of Education. (2020). *Adoption of the Basic Education Learning Continuity Plan for School Year 2020–2021* (DepEd Order No. 11, s. 2020). Department of Education.

[28.] Department of Education. (2021). *Digital Rise Program: Empowering learners through technology*. Department of Education.

[29.] DepEd Order No. 24, s. 2020. (2020). *Guidelines for the implementation of the Learning Continuity Plan for School Year 2020–2021*. Department of Education, Philippines.

[30.] DepEd Order No. 32, s. 2010. (2010). *Policies and guidelines on the use of ICT in teaching and learning*. Department of Education, Philippines.

[31.] DepEd Order No. 42, s. 2017. (2017). *National adoption and implementation of the Philippine Professional Standards for Teachers (PPST)*. Department of Education, Philippines.

[32.] Dizon, M. E. (2023). Digital analytics competence and engagement tracking among secondary teachers in blended classrooms. *Journal of Educational Technology Studies, 5*(2), 92–104. https://doi.org/10.5281/zenodo.7841093

[33.] Domingo, J. L. (2023). Data literacy and technology integration among school administrators: Basis for leadership training programs. *International Journal of Educational Innovation and Management, 9*(1), 70–83. https://doi.org/10.5281/zenodo.7871459

[34.] Dominguez, E. V. (2023). Building data-driven leadership: ICT training needs of school heads in public basic education. *Journal of Educational Research and Policy, 8*(1), 66–79. https://doi.org/10.52006/jerp.v8i1.107

[35.] Evangelista, R. P. (2023). Enhancing creative media production skills among educators through digital design integration. *International Journal of Innovation in Education, 8*(1), 45–58. https://doi.org/10.52006/ijie.v8i1.94

[36.] Fernández-Otoya, F., et al. (2024). Digital and information literacy in basic-education teachers: A systematic literature review. *Education Sciences, 14*(2), 127. https://doi.org/10.3390/educsci14020127

[37.] Flores, K. P., & Lazo, M. D. (2022). Digital literacy and cybersecurity awareness among public school teachers in the Philippines. *Journal of Educational Technology and Innovation, 5*(3), 88–101. https://doi.org/10.5281/zenodo.6582145

[38.] Garcia, L. J., & Reyes, M. A. (2022). Professional experience and digital proficiency: Understanding predictors of teachers' technology integration. *International Journal of Learning, Teaching and Educational Research, 21*(6), 76–89. https://doi.org/10.26803/ijlter.21.6.7

[39.] Garcia, R. M., & Lopez, J. T. (2021). Information literacy and media design competence among school administrators in public schools. *Asian Journal of Educational Technology, 5*(4), 72–86. https://doi.org/10.5281/zenodo.5678456

[40.] George, D., & Mallery, P. (2019). *IBM SPSS Statistics 26 step by step: A simple guide and reference* (16th ed.). Routledge.

[41.] Gerald, S. N. (2020). *Measuring principals' technology leadership and principals' behaviors: A quantitative study* (Doctoral dissertation). Virginia Tech, Blacksburg, VA, United States.

[42.] Gomez, R. C. (2023). Institutional support and exposure as determinants of digital competence among school heads. *Philippine Journal of Educational Management and Innovation, 6*(1), 74–87. https://doi.org/10.52006/pjemi.v6i1.106

[43.] Ivanov, A., Petrovic, N., & Jovanovic, D. (2025). Teachers' digital competencies before, during, and after the COVID-19 pandemic. *Sustainability, 17*(5), 2309. https://doi.org/10.3390/su17052309

[44.] Jogezai, N. A., Koroleva, D., & Baloch, F. A. (2023). Teachers' digital competence in the post COVID-19 era: The effects of digital nativeness and digital leadership capital. *Contemporary Educational Technology, 15*(4), ep466. https://doi.org/10.30935/cedtech/13620

[45.] Leesibel, G. A. (2024). Information and communication technology (ICT) competencies of public elementary school teachers in Taal District. *Pantao: The International Journal of the Humanities and Social Sciences, 3*(3), 1–19.

[46.] Leonardo, S. (2022). Digital skills training for teachers: Improving digital literacy and competence at Camp Abelon Elementary School. *E-Saliksik Research Report*. DepEd Division of Pagadian City.

[47.] Locsin, R. C. (2005). *Technological competency as caring in nursing: A model for practice*. Sigma Theta Tau International Honor Society of Nursing.

[48.] Macapagal, E. R., & Flores, M. A. (2022). Digital communication proficiency and administrative challenges in online learning supervision. *Philippine Journal of Educational Leadership, 6*(3), 56–70. https://doi.org/10.52006/pjel.v6i3.91

[49.] Maltez, K. M. T. (2025). School structure and technology integration in instruction. *AIDE International Research Journal, 7*(1), 1–15.

[50.] Manaban, J. P. (2025). *ICT competency and barriers among elementary mathematics teachers in the Schools Division of Bais City* (Unpublished master's thesis). Negros Oriental State University, Dumaguete City, Philippines.

[51.] Medina, A. L. (2023). Digital data literacy and analytics integration among basic education teachers. *Journal of ICT in Education, 6*(2), 88–101. https://doi.org/10.5281/zenodo.7834125

[52.] Mendoza, L. G., & Del Rosario, P. E. (2023). Assessing computer literacy and ICT safety practices among secondary teachers in the digital era. *International Journal of Learning and Instruction, 12*(2), 55–68. https://doi.org/10.52006/ijli.v12i2.77

[53.] Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017–1054.

[54.] Moila, M. (2024). *Teachers' competence in using technology for teaching and learning: Application of the UNESCO ICT-CFT model* (Unpublished doctoral dissertation). University of South Africa, Pretoria, South Africa.

[55.] Myyry, L., et al. (2022). COVID-19 accelerating academic teachers' digital competence in distance teaching. *Frontiers in Education, 7*, 770094. https://doi.org/10.3389/feduc.2022.770094

[56.] National Educators Academy of the Philippines. (2023). *ICT capacity development report*. Department of Education.

[57.] Organization for Economic Cooperation and Development. (2022). *Teaching in the digital era: Skills, challenges, and policies for innovation*. OECD Publishing.

[58.] Perez, C. A., & Aguilar, D. M. (2022). Gender and instructional leadership in Philippine public schools: Implications for digital competence development. *Asia Pacific Journal of Educational Research, 5*(1), 75–88. https://doi.org/10.52006/apjer.v5i1.88

[59.] Perez, D. R. (2023). School heads' and teachers' competencies in the new normal. *Philippine Education Journal, 5*(2), 1–20.

[60.] Philippine Health Research Ethics Board. (2017). *National ethical guidelines for health and health-related research*. DOST–PCHRD.

[61.] Polit, D. F., & Beck, C. T. (2021). *Nursing research: Generating and assessing evidence for nursing practice* (11th ed.). Wolters Kluwer.

[62.] Rahmawati, R. (2025). *Unpacking the digital competence challenge of vocational teachers in Indonesia* (Unpublished doctoral dissertation). Universitas Pendidikan Indonesia, Bandung, Indonesia.

[63.] Ramos, P. G., & Villanueva, M. E. (2022). Gender and work–life balance in technology-mediated teaching among public school teachers. *International Journal of Learning, Teaching and Educational Research, 21*(4), 134–147. https://doi.org/10.26803/ijlter.21.4.8

[64.] Raptis, N. (2025). Distributed leadership, new technologies and teachers' digital competence in the post-COVID era. *European Journal of Education and Pedagogy, 6*(1), 1–10.

[65.] Rayray, M. L. (2022). *Technology leadership competence of public school heads in the Schools Division of Urdaneta City* (Doctoral dissertation). Pangasinan State University, Urdaneta City, Philippines.

[66.] Reyes, M. C., & Bautista, C. R. (2022). ICT integration competence and data analytics readiness of public school heads. *Philippine Journal of Educational Administration, 6*(2), 91–104. https://doi.org/10.52006/pjea.v6i2.93

[67.] Reyes, M. C., & Flores, P. D. (2022). ICT lesson planning and the emerging need for data-driven instruction in Philippine schools. *International Journal of Educational Research and Technology, 12*(4), 65–78. https://doi.org/10.52006/ijert.v12i4.97

[68.] Richardson, J. E. (2022). *Perceptions of K–12 principals regarding integration of technology into the curriculum* (Doctoral dissertation). Walden University. https://scholarworks.waldenu.edu/dissertations/12834

[69.] Rivera, J. B. (2023). Digital capability and ICT proficiency among school administrators: Challenges in software application and management efficiency. *Journal of Educational Leadership and Technology, 6*(2), 77–90. https://doi.org/10.5281/zenodo.7814527

[70.] Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.

[71.] Santos, G. L., & de Guzman, R. T. (2023). Postgraduate education and its impact on leadership performance among school heads in basic education. *Philippine Journal of Educational Studies, 11*(2), 90–103. https://doi.org/10.57106/pjes.11.2.90

[72.] Santos, R. T., & Villareal, J. P. (2022). Teachers' ethical use of social media and their challenges in monitoring online learner participation. *International Journal of Digital Education, 4*(1), 55–67. https://doi.org/10.52006/ijde.v4i1.91

[73.] Sarmiento, P. L. (2023). Digital media production skills and administrative communication effectiveness in public education. *Journal of Instructional Leadership and Technology, 8*(1), 60–73. https://doi.org/10.52006/jilt.v8i1.101

[74.] Schmitz, M. L., Petko, D., & Cantieni, A. (2023). Transformational leadership for technology integration in schools: Predictors of digital instructional change. *Computers & Education, 200*, 104783. https://doi.org/10.1016/j.compedu.2023.104783

[75.] Tanghal, A. B., & Tanghal, J. S. (2022). School heads' digital competency amidst COVID-19 crisis. *International Journal of Innovative Research in Multidisciplinary & Professional Studies, 10*(2), 1–8.

[76.] UNESCO. (2023). *Global framework for digital literacy in education*. UNESCO Publishing.

[77.] United Nations Educational, Scientific and Cultural Organization. (2018). *ICT Competency Framework for Teachers* (Version 3). UNESCO Publishing.

[78.] Velasco, K. M., & Dela Peña, M. C. (2022). ICT leadership readiness and software utilization skills of public school administrators. *International Journal of Educational Management and Technology, 4*(3), 58–71. https://doi.org/10.52006/ijemt.v4i3.89

[79.] Villanueva, C. P., & Santos, G. B. (2021). ICT integration and software utilization among secondary teachers: Challenges and prospects. *Asian Journal of Education and E-Learning, 9*(4), 55–67. https://doi.org/10.5281/zenodo.5712342

[80.] Waclin, S. S. (2023). Information and communication technology (ICT) competency and awareness of elementary teachers in Kabayan District. *E-Saliksik Research Report*. Department of Education–Benguet.

[81.] Yang, Q., Alias, B. S., & Mohd Nor, M. Y. (2025). Principals' technology leadership and teachers' ICT integration: A systematic review on capacity building for quality improvement and sustainable education. *International Journal of Learning, Teaching and Educational Research, 24*(9), 211–234. https://doi.org/10.26803/ijlter.24.9.11