

Digital Skills of Public Secondary School Teachers in District V-B, San Carlos City Division

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Abstract

The increasing integration of technology in education underscores the importance of strengthening teachers' digital skills to enhance instructional delivery and student engagement. This study assessed the extent of utilization of digital skills among public secondary school teachers in District V-B of San Carlos City and examined differences in perception between teachers and school heads. Using a descriptive-survey design and total enumeration sampling, data were gathered through a validated questionnaire that measured teachers' digital competencies in areas such as educational software use, digital resource management, data analytics, technology integration, student engagement strategies, and technology-supported learning environments. Descriptive and inferential statistics were used to analyze the data.

Results revealed that teachers demonstrated a moderate extent of digital skills utilization across all domains, indicating that while digital tools are being used in instruction, their application remains developing rather than fully maximized. Both teachers and school heads shared similar evaluations of digital skills, as no significant difference was found between their perceptions. Teachers also identified several challenges in digital skills utilization, which were generally viewed as moderately serious. The study concludes that although teachers possess functional digital competencies, continuous professional development is needed to support higher-level digital literacy and enhance technology integration in classroom practices. The study also proposes an action plan to strengthen the digital capacity of public secondary school teachers.

Keywords: *Digital Skills, Technology Integration, Teacher Competence, ICT Literacy, Instructional Innovation*

INTRODUCTION

In today's rapidly changing educational landscape, digital competence has become an essential component of effective teaching and learning. The integration of technology in education has transformed traditional classroom practices into more interactive, engaging, and learner-centered approaches. Teachers are now expected to possess digital skills that enable them to design innovative lessons, assess learning outcomes through digital platforms, and communicate effectively using various technological tools. In public secondary schools, enhancing teachers' digital competence is vital to ensure that students are equipped with the necessary skills to thrive in a technology-driven society. However, challenges such as limited access to resources, insufficient training, and varying levels of technological proficiency among teachers continue to hinder the full realization of technology integration in education.

A review of related literature reveals that digital literacy is a key factor influencing the quality of instruction and learner engagement. Studies have shown that teachers with higher levels of digital skills demonstrate more effective classroom practices and improved student outcomes. Scholars have also highlighted that continuous professional development and administrative support play significant roles in strengthening teachers' confidence in utilizing digital tools. In the Philippine context, initiatives such as the ICT Literacy and Competency Development Framework of the Department of Education have been introduced to build teachers' technological capacity. Despite these efforts, disparities in digital access and training across schools remain evident, calling for a deeper assessment of teachers' actual digital competence and its implementation in public secondary education.

This study aimed to determine the level of digital skills among public secondary school teachers as perceived by both teachers and school heads. It sought to assess teachers' competencies in areas such as computer operations, digital communication, instructional technology integration, and data management. Furthermore, it investigated whether there are significant differences between the perceptions of teachers and school heads regarding these competencies.

Materials and Methods

Research Design

This study employed a descriptive survey research design to determine the extent of digital skills among public secondary school teachers in District V-B, San Carlos City Division, Pangasinan. This design was chosen because it allows for an objective and systematic description of the existing conditions and practices related to teachers' digital competence.

Participants

The participants of the study included all Grade 7 secondary teachers ($n = 74$) and school heads ($n = 11$) from eleven public secondary schools within the district, making use of a total enumeration technique to ensure comprehensive data collection from the entire population.

Instruments

The instrument used in gathering the data was a structured questionnaire-checklist, which was adopted and slightly modified from the study of Dormiendo (2022) on the *Digital Skills of Teachers in the Public High Schools of the Division of Calbayog City, Samar*. The questionnaire consisted of two parts: Part I assessed the extent of digital skills among teachers, while Part II determined the seriousness of problems encountered in the use of digital technologies for teaching and learning. Responses were rated using a five-point Likert scale for the extent of digital skills and a three-point Likert scale for the degree of seriousness of problems encountered.

Procedure

For the procedure, the researcher first sought approval from the Schools Division Superintendent, District Supervisor, and participating school heads. Once permission was granted, questionnaires were

personally distributed and retrieved by the researcher to ensure a 100% response rate. The collected data were then tallied, tabulated, and analyzed systematically.

Data Analysis

The data analysis utilized weighted mean to describe the extent of teachers' digital skills and the seriousness of problems encountered. To determine significant differences between the perceptions of teachers and school heads, a t-test was conducted at a 0.05 level of significance using SPSS software. This combination of descriptive and inferential statistics provided a clear understanding of the digital competence level of teachers and the challenges they faced in integrating technology into instruction.

RESULTS AND DISCUSSIONS

EXTENT OF UTILIZATION ON DIGITAL SKILLS ALONG USING EDUCATIONAL SOFTWARE AS PERCEIVED BY THE TEACHERS AND SCHOOL HEADS

Table 2 presents the results of the study on the extent of utilization on digital skills along using educational software as perceived by the teachers and school heads.

the findings reveal that both teachers and school heads moderately utilize digital skills in using educational software, as indicated by the overall mean ratings of 2.92 and 2.98, respectively. This suggests that educators possess a fair level of competence but are not fully maximizing the potential of educational software in classroom instruction. Similar to the findings of Torres and Reyes (2018) and Cruz and Garcia (2019), the moderate extent of utilization may be attributed to limited professional development and insufficient hands-on training in digital integration. These results highlight the need for targeted capacity-building programs, continuous ICT training, and policy initiatives from the Department of Education to strengthen teachers' digital competence. The study was limited to a small group of teachers and school heads within one district, which may not fully represent the digital proficiency levels of educators in other.

Table 2

Extent of Utilization on Digital skills Along Using Educational Software as Perceived by the Teachers And School Heads

Using Educational Software	Teachers		School heads		Overall	
	Mean	DR	Mean	DR	AW M	DR
1. Demonstrate proficiency in using a variety of educational software tools.	2.65	ME	2.59	ME	2.62	ME
2. Stay updated on the latest trends and advancements in educational software technology.	3.26	ME	3.37	ME	3.32	ME
3. Integrate educational software effectively into lesson planning and delivery.	3.35	ME	3.32	ME	3.34	ME

4. Use different educational software applications.	2.62	ME	2.78	ME	2.70	ME
5. Analyze data from educational software to make informed decisions for school improvement.	2.73	ME	2.86	ME	2.80	ME
Total	2.92	ME	2.98	ME	2.95	ME

EXTENT OF UTILIZATION ON DIGITAL SKILLS ALONG WITH MANAGING DIGITAL RESOURCES AS PERCEIVED BY THE TEACHERS AND SCHOOL HEADS

Table 3 shows that teachers and school heads moderately utilize digital skills in managing digital resources, with an overall mean of 3.21 (“Moderate Extent”). Higher ratings were given to understanding the importance of digital resource management (3.46 HE) and recognizing the value of metadata and tagging systems (3.79 HE), while most other indicators remained moderate. This moderate utilization reflects foundational knowledge in digital resource management but indicates a need for further training and support. The findings align with the TPACK framework, emphasizing the integration of technology, pedagogy, and content knowledge, and underscore the role of professional development and leadership in enhancing digital skills. Limitations include the study’s focus on a single district, which may not represent broader contexts. The results suggest the importance of ongoing training, school-level support, and policy initiatives to strengthen teachers’ digital resource management and improve teaching and learning outcomes.

Table 3
Extent of Utilization on Digital skills Along with Managing Digital Resources as Perceived by the Teachers and School Heads

Managing Digital Resources	Teachers		School heads		Overall	
	Mean	DR	Mean	DR	AWM	DR
1. Understand the importance of digital resource management in enhancing teaching and learning.	3.42	HE	3.49	HE	3.46	HE
2. Stay informed about emerging technologies and trends in digital resource organization and access.	2.65	ME	2.75	ME	2.70	ME
3. Be aware of licensing agreements and copyright regulations related to digital content.	3.12	ME	3.29	ME	3.21	ME
4. Recognize the value of metadata and tagging systems for efficient digital resource retrieval.	3.56	HE	4.01	HE	3.79	HE
5. Familiarize with data backup and recovery strategies to safeguard digital resources against loss.	2.76	ME	3.02	ME	2.89	ME
Total	3.10	ME	3.31	ME	3.21	ME

EXTENT OF UTILIZATION ON DIGITAL SKILLS ALONG WITH LEVERAGING DATA ANALYTICS AS PERCEIVED BY THE TEACHERS AND SCHOOL HEADS

Table 4 shows that teachers and school heads moderately utilize digital skills in leveraging data analytics, with an overall mean of 3.24 ("Moderate Extent"). Most indicators, such as understanding the role of data analytics, knowledge of data sources, data privacy, and data visualization, were rated as "Moderate Extent," while staying informed about ethical considerations received a higher rating (3.72 HE). Overall, the results indicate a high awareness of the importance of data analytics in decision-making, though there is room for improvement in understanding data collection methods and its transformative role in school improvement. These findings align with research emphasizing the value of data-driven practices for personalized learning, targeted interventions, and continuous improvement in education. The results suggest that professional development focused on data analytics could enhance teachers' and school heads' capacity to leverage educational data for informed decision-making and improved student outcomes. Limitations include the study's focus on a single district, which may limit generalizability.

Table 4

Extent of Utilization on Digital skills Along with Leveraging Data Analytics as Perceived by the Teachers And School Heads

Leveraging Data Analytics	Teachers		School heads		Overall	
	Mean	DR	Mean	DR	AW M	DR
1. Understand the role of data analytics in informing decision-making processes within the school environment.	3.23	ME	3.25	ME	3.24	ME
2. Be knowledgeable about different types of data sources and data collection methods used in educational settings.	2.87	ME	2.91	ME	2.89	ME
3. Recognize the importance of data privacy and security protocols when handling sensitive educational data.	3.22	ME	3.31	ME	3.27	ME
4. Familiarize with data visualization techniques to communicate insights effectively to stakeholders.	3.02	ME	3.15	ME	3.09	ME
5. Stay informed about ethical considerations and best practices in utilizing data analytics to drive school improvement initiatives.	3.42	HE	4.02	HE	3.72	HE
Total	3.15	ME	3.33	ME	3.24	ME

EXTENT OF UTILIZATION ON DIGITAL SKILLS ALONG WITH INTEGRATING TECHNOLOGY AS PERCEIVED BY THE TEACHERS AND SCHOOL HEADS

Table 5 shows the extent of utilization of digital skills in integrating technology as perceived by teachers and school heads. Teachers and school heads rated indicators such as aligning technology

integration with curriculum goals (3.44 HE) and staying informed about digital citizenship and internet safety (3.60 HE) as “High Extent,” while understanding pedagogical principles, being knowledgeable about educational technology tools, and keeping up with trends in technology use were rated as “Moderate Extent” (3.23–3.32 ME). Overall, teachers and school heads generally agree on the moderate-to-high utilization of digital skills in integrating technology, with an overall average mean of 3.37. The similarities in ratings reflect a shared recognition of the importance of technology integration, though there is room for improvement in expanding knowledge of educational technology tools and ensuring curriculum alignment. These findings are consistent with research emphasizing the role of teachers’ pedagogical beliefs, TPACK frameworks, and models such as SAMR in effective technology integration. The results suggest that professional development focusing on both technical skills and pedagogical strategies can enhance the integration of technology, optimize student learning, and support continuous improvement in instructional practices. Limitations include the study’s focus on a single district, which may affect generalizability.

Table 5
Extent of Utilization on Digital skills Along Integrating Technology as Perceived by the Teachers
And School Heads

Integrating Technology	Teachers		School Heads		Overall	
	Mean	DR	Mean	DR	AW	DR
1. Understand the pedagogical principles behind effective integration of technology in teaching and learning.	3.35	ME	3.29	ME	3.32	ME
2. Be knowledgeable about the variety of educational technology tools and resources available for different subject areas.	3.23	ME	3.36	ME	3.30	ME
3. Recognize the importance of aligning technology integration with curriculum goals and learning objectives.	3.41	HE	3.46	HE	3.44	ME
4. Familiarize with current trends and best practices in using technology to enhance student engagement and achievement.	3.24	ME	3.21	ME	3.23	ME
5. Stay informed about digital citizenship and internet safety protocols to ensure responsible technology use among students and staff.	3.55	HE	3.64	HE	3.60	HE
Total	3.36	ME	3.39	ME	3.37	ME

EXTENT OF UTILIZATION ON DIGITAL SKILLS FOSTERING STUDENT ENGAGEMENT AS PERCEIVED BY THE TEACHERS AND SCHOOL HEADS

Table 6 presents the extent of utilization of digital skills in fostering student engagement as perceived by teachers and school heads. Both groups rated the use of social media and online forums for student interaction (4.15 HE) and empowering students through self-directed exploration (3.45 HE) as “High Extent,” while implementing interactive digital platforms, gamification, and multimedia/digital storytelling were rated as “Moderate Extent” (2.83–3.27 ME). Overall, the average weighted mean of 3.31 indicates a moderate extent of utilization. These results suggest that while teachers and school heads effectively apply certain digital strategies to engage students, there is room for improvement, particularly in implementing interactive digital platforms for classroom participation. The findings align with Philippine studies highlighting the importance of digital skills in promoting active learning, collaboration, creativity, and critical thinking. Strengthening these digital competencies can enhance student engagement and contribute to more dynamic and interactive learning experiences in the classroom.

Table 6
Extent of Utilization on Digital skills Along Fostering Student Engagement as Perceived by the Teachers And School Heads

Fostering Student Engagement	Teachers		School Heads		Overall	
	Mean	DR	Mean	DR	AWM	DR
1. Implement interactive digital platforms and tools to facilitate active participation and collaboration among students in classroom activities.	2.78	ME	2.87	ME	2.83	ME
2. Utilize social media and online forums creatively to foster student interaction, discussion, and peer-to-peer learning experiences.	4.11	HE	4.19	HE	4.15	HE
3. Incorporate gamification elements into digital learning activities to enhance student motivation and engagement with course material.	3.23	ME	3.31	ME	3.27	ME
4. Use of multimedia and digital storytelling techniques to create immersive learning experiences that capture students' interest and imagination.	2.71	ME	2.98	ME	2.85	ME
5. Empower students to take ownership of their learning by providing opportunities for self-directed exploration and research using digital resources and online databases.	3.42	HE	3.48	HE	3.45	HE
Total	3.25	ME	3.37	ME	3.31	ME

EXTENT OF UTILIZATION ON DIGITAL SKILLS ALONG CREATING LEARNING ENVIRONMENT AS PERCEIVED BY THE TEACHERS AND SCHOOL HEADS

Table 7 presents the extent of utilization of digital skills in creating a learning environment as perceived by teachers and school heads. Both groups rated all indicators at a “Moderate Extent” (ME), with average weighted mean of 3.02. Specifically, implementing innovative digital tools (2.84 ME), adapting resources for diverse learning styles (3.08 ME), using data-driven insights to optimize instruction (2.74 ME), encouraging collaborative digital projects (3.17 ME), and integrating emerging technologies such as VR/AR (3.29 ME) all fell within the moderate range. These results indicate that while teachers and school heads effectively use digital skills to foster interactivity, collaboration, and experiential learning, there is room for growth in fully leveraging technology to enhance the learning environment. The findings align with Philippine studies highlighting the importance of digital pedagogy, technology integration, and digital literacy in promoting student engagement, creativity, and success. Strengthening these competencies can enable educators to create more dynamic, innovative, and inclusive learning environments.

Table 7
Extent of Utilization of Digital Skills Along with Creating Learning Environment as Perceived by the Teachers and School Heads

Creating Learning Environment	Teachers		School Heads		Overall	
	Mean	DR	Mean	DR	AW M	DR
1. Implement innovative digital tools and technologies to create an interactive and engaging learning atmosphere for students.	2.89	ME	2.78	ME	2.84	ME
2. Demonstrate the ability to adapt digital resources and platforms to accommodate diverse learning styles and preferences.	3.01	ME	3.15	ME	3.08	ME
3. Utilize data-driven insights from digital learning analytics to inform instructional strategies and optimize the learning environment.	2.67	ME	2.81	ME	2.74	ME
4. Encourages collaborative digital projects and virtual teamwork among students to promote critical thinking and problem-solving skills.	3.05	ME	3.28	ME	3.17	ME
5. Facilitates the integration of emerging technologies such as virtual reality or augmented reality to enhance experiential learning opportunities within the classroom environment.	3.23	ME	3.34	ME	3.29	ME
Total	2.97	ME	3.07	ME	3.02	ME

DIFFERENCES IN THE EXTENT OF UTILIZATION ON DIGITAL SKILLS OF PUBLIC SECONDARY SCHOOL TEACHERS AND SCHOOL HEADS

Table 8 shows the perceptions of teachers and school heads on the utilization of digital skills across six areas, all rated at a “High Extent” (HE). The overall weighted means were 3.76 for teachers and 3.78 for school heads. The computed t -value of 0.2515 is below the critical value of 2.1242 at the 0.05 significance level, indicating no significant difference between the two groups. This suggests that teachers and school heads share similar views on the use of digital skills in educational practices.

Table 8
Significant Differences in the Extent of Utilization On Digital skills of Public Secondary Teachers

Digital skills	Teachers		School Heads	
	Weighted Mean	DR	Weighted Mean	DR
1. Using educational software	3.76	HE	3.78	HE
2. Learning Environment	4.15	HE	4.13	HE
3. Integrating Technology	3.68	HE	3.70	HE
4. Curriculum and Planning	3.74	HE	3.73	HE
5. Fostering Student Engagement	4.11	HE	4.10	HE
6. Creating Learning Environment	4.03	HE	4.01	HE
7. Personal Growth and Professional Development	3.53	HE	3.48	HE
Total	3.76	HE	3.78	HE

Computed t -value: 0.2515 @ df 4
 Alpha: @ 0.05 level of significance
 Critical Value: 2.1242 df 4
 Decision: accept the null hypothesis
 Interpretation: No significant difference

EXTENT OF SERIOUSNESS OF PROBLEMS ENCOUNTERED BY TEACHERS

Table 10 shows that teachers rated the problems in using digital skills as “Moderately Serious” (mean = 2.17). The most serious issues were lack of digitized materials (2.67 S), limited training (2.56 S), and insufficient computer equipment (2.47 S), while lack of administrative support was least serious (1.45 LS).

This implies that the utilization of Digital skills among Public Secondary School Teachers affects the performance of teachers because of the problems encountered. Emergency periods also affect the

digitalization of schools. The COVID-19 pandemic led to the closure of schools and forced them to seek appropriate and connective ways to keep working on the curriculum .

Table 10
Degree of Seriousness of Problems Encountered

Indicators	Teachers		Rank
	Mean	DR	
1. Lack of Digitized materials such as e-books and other learning resources.	2.67	S	1
2. Lack of Computer equipment.	2.47	S	3
3. Lack of orientation and training.	2.56	S	2
4. Lack of pre-requisite knowledge and skills in utilizing the digitized materials.	1.60	MS	9
5. Lack of expertise in designing, improving, and manipulating digitized instructional materials and devices.	2.12	MS	7
6. Lack of skills in developing and formulating evaluation materials or strategies.	2.15	MS	6
7. Inadequate devices and instruments to be utilized in Classroom activities.	2.09	MS	8
8. Lack of support from school administrators in providing the budget for school materials.	1.45	LS	10
9. Inadequate supply of learning manuals and digitized instructional materials.	2.29	MS	5
10. Poor internet connection	2.33	MS	4
Total	2.17	MS	

CONCLUSION

Based on the findings, it can be concluded that the utilization of digital skills among public secondary school teachers in San Carlos City is moderate, with both teachers and school heads showing aligned perceptions of their capabilities. While teachers demonstrate proficiency in areas such as educational software, managing digital resources, leveraging data analytics, integrating technology, fostering student engagement, and creating effective learning environments, challenges such as limited training, inadequate digital resources, and insufficient infrastructure partially hinder their full utilization of these skills. To address these gaps, it is recommended that schools invest in targeted professional development programs, provide continuous support and resources for skill enhancement, and foster collaborative partnerships with government agencies and industry stakeholders. Future research could explore the long-term impact of these interventions on teaching effectiveness and student outcomes, as well as investigate innovative

strategies to further strengthen teachers' digital competencies and optimize technology integration in diverse classroom settings.

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