

Teachers' Digital Competence and Student's Engagement in Select Districts of Misamis Oriental Division

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Abstract

Teachers' digital competence plays a crucial role in integrating technology into classroom instruction to enhance students' academic experiences and engagement. This study determined the extent of teachers' digital competence and students' learning engagement in select districts of Misamis Oriental Division during the School Year 2024–2025. Specifically, it aimed to find out the gap of technology-integration instruction. It employed a descriptive-correlational research design, data were gathered using a validated researcher-made questionnaire administered to 213 secondary school teachers selected through total population sampling and 426 secondary school students chosen via simple random sampling, analyzed through descriptive and inferential statistics such as the mean and standard deviation to describe the variables in the study. Furthermore, Pearson-product moment correlation coefficient (r) was also employed to determine the significant relationship among the variables.

Findings revealed that teachers demonstrated a high level of digital competence, particularly in Delivery and Students' Support, while School Development showed the lowest level while students demonstrated a moderate level of engagement, with Collaboration and Support obtaining the highest level and Learning Environment the lowest. Further, there was no significant relationship between teachers' digital competence and student engagement. It is concluded that high teacher digital literacy does not automatically translate into high student engagement as tool usage alone is insufficient towards active learning. It is recommended that teachers should utilize technology to promote collaborative learning through digital platforms, interactive communication using tools and the personalized learning experiences in facilitating learning environment. They should explore topics that interest students beyond classroom lessons.

Keywords: digital competence, student engagement

1. Introduction

The integration of technology in secondary education is essential in preparing students for a digitally driven world, making teachers' digital competence an important factor in effective technology integration, student engagement, and learning outcomes. Although students are increasingly familiar with digital devices, social media, and online resources, some teachers continue to rely on traditional teaching methods due to limited technological skills, training, and school facilities. The Department of Education has

supported technology integration through computerization programs and digital training, while global initiatives emphasize the development of digital skills and technology enhanced, student centered learning environments. Teachers are increasingly expected to act as facilitators who use digital tools to promote active participation, collaboration, personalized learning, and deeper understanding. However, despite these efforts, Philippine students continue to experience poor performance in international assessments, highlighting challenges in the effective use of educational technology. These concerns show the need to examine teachers' digital competence and its connection to students' engagement in secondary schools.

Research Questions

This study aimed to determine the teachers' digital competence and students' engagement in select districts of Misamis Oriental Division for School Year 2024-2025.

Specifically, it sought to answer the following questions:

1. What is the extent of teachers' digital competence considering preparation, delivery and students' support, generalization and revision, professional development, school development, and innovating education?
2. To what extent is the students' engagement as to collaboration and support, technology-supported learning, and the learning environment?
3. Is there a significant relationship between the extent of teachers' digital competence and extent of students' engagement?

Significance

The study may benefit the Department of Education by providing a basis for developing programs, teaching strategies, and professional development activities that strengthen teachers' digital competence and promote effective technology integration. School heads may use the findings to provide technical assistance, identify teachers' professional development needs, and establish supportive digital learning environments. Teachers may use the results for reflection and to improve lesson planning and delivery based on students' needs and potential. Students may benefit by improving their use of digital learning tools and educational platforms to increase their engagement and confidence in learning. Future researchers may use the findings as a reference for exploring other factors related to teachers' digital competence, technology integration, and students' engagement in secondary education.

Scope and Limitations

This study focused on teachers' digital competence and students' engagement in secondary education in select districts of Misamis Oriental that include the following: Balingasag, Lagonglong and Salay districts. The respondents were 213 teachers and 426 students. The independent variables were limited only to teachers with the components in terms of teaching preparation, teaching delivery and students' support, teaching generalization and revision, professional development, and innovating education, with the dependent variables, which are limited to students based on the influence of teachers, curriculum design, and learning environment.

Literature Review**Digital Competence**

The growing presence of digital technology in education has increased the need for teachers to develop competencies that allow them to use digital resources effectively and meaningfully in the teaching and learning process. Teachers are expected not only to operate digital tools but also to integrate them into lesson preparation, instruction, assessment, professional learning, school activities, and innovative practices. Tzafilkou et al. (2023) identified six major areas of teachers' digital competence, namely preparation, delivery and student support, generalization and revision, professional development, school development, and educational innovation, while also noting areas that require further improvement, particularly in teaching delivery and professional development. Bates (2019) emphasized that effective digital education requires teachers to possess the skills to use technology appropriately and apply learning approaches suited to online contexts, while Hämäläinen et al. (2021) stressed that both teachers and students need adequate digital skills to participate effectively in technology supported learning. Koehler and Mishra (2023) highlighted the importance of integrating technology into lesson planning to support active and personalized learning, while Ertmer and Ottenbreit Leftwich (2021) explained that digital assessment tools provide teachers with information that can guide instructional adjustments and improve learning. Overall, the literature indicates that teachers' digital competence involves the ability to plan, deliver, assess, improve, and innovate instruction through appropriate use of technology, thereby creating learning experiences that can support student participation, interaction, and engagement.

Student Engagement

The increasing use of digital technology in education has transformed traditional teaching and learning by providing students with greater opportunities to communicate, collaborate, access learning resources, and participate actively in classroom activities. Technology integration has become particularly relevant in promoting student engagement because digital platforms and interactive tools can create more flexible, collaborative, and student-centered learning experiences. Bidayan (2024) found a significant relationship between the perceived importance of classroom technology integration and student engagement, suggesting that teachers who recognize the value of technology and confidently use digital tools can contribute to greater student participation. Bond and Bedenlier (2019) further explained that technology can strengthen student engagement through collaboration and support, technology supported learning, and an appropriate learning environment, particularly when digital tools are aligned with instructional goals. Heilporn et al. (2023) emphasized that structured peer interaction and supportive feedback can improve students' emotional, cognitive, social, and behavioral engagement, showing the importance of collaboration in technology enhanced learning. Nkomo et al. (2021) also reported that learning management systems, collaborative platforms, and multimedia resources can promote participation, interaction, and deeper engagement by giving students flexible access to learning materials and opportunities to interact with knowledge and peers. Overall, the literature indicates that technology contributes to student engagement when it is intentionally integrated into instruction and supported by teachers who possess the necessary digital competence, while collaborative activities, meaningful interaction, accessible resources, and a supportive learning environment help students remain actively involved in the learning process.

2. Methodology

Research Design

This study used the descriptive-correlational method of research in data collection and analysis. Descriptive correlational research is typically employed when a researcher wishes to determine the traits of particular groups of people or discover connections between various variables. In a descriptive correlational design, the researcher used a single group and merely looks for a relationship between two variables. It explains why the descriptive correlational design is used in research and how important it is for examining the correlations between variables.

In addition to collecting phenomena, descriptive-correlational research also focuses on data analysis in an organized manner that is inferential and useful for empirical research and comprehension. From descriptive-correlational research, facts and findings are concluded about the population under study (Brodowics, 2024). Descriptive correlational research focuses on describing and explaining, sometimes in a somewhat definite manner, the phenomenon under investigation (Creswell, 2019). Using descriptive-correlational research designs enables the researcher to investigate the impact of teachers' digital competence and students' engagement in secondary education.

Participants

The respondents of this study were the two hundred thirteen (213) secondary school teachers and four hundred twenty-six (426) students of Lagonglong and Salay Districts in the Division of Misamis Oriental for the School Year 2024-2025. These teachers were currently teaching in the school districts mentioned above. Based on the data from the Division Planning Office, the total population of secondary school teachers in Lagonglong and Salay District is 213. The researcher decided to take the total population of the secondary teachers as the respondents of the study. For the student-respondents, it was a 1:2 ratio, which is 426 secondary students.

Data Collection

The researcher used a researcher made survey questionnaire consisting of two parts. Part I assessed teachers' digital competence in preparation, delivery and student support, generalization and revision, professional development, school development, and educational innovation. The questionnaire was based on an established digital competence framework but was modified to fit the context and objectives of the study, with ten researcher developed indicators for each dimension. Part II assessed students' engagement in terms of collaboration and support, technology supported learning, and learning environment. The dimensions were adapted from an established digital learning framework and modified to focus on the relationship between teachers' digital competence and students' engagement. Each dimension contained ten customized indicators designed to reflect the local educational setting and the study's specific objectives.

Data Analysis

The data that were gathered in this study were coded and treated statistically. The study used descriptive and inferential statistics to determine the mean and standard deviations of variables. To examine the level of teachers' digital competence and students' engagement in secondary education, Problems 1 and 2 used descriptive statistics such as mean and standard deviation. In Problem 3, the Pearson Product-Moment

Correlation Coefficient (r) was employed to determine the significant relationship between teachers' digital competence and students' engagement.

3. Results and Discussions

Problem 1. What is the extent of teachers' digital competence considering preparation, delivery and students' support, generalization and revision, professional development, school development, and innovating education?

Table 1
Summary Distribution of the Extent of Teachers' Digital Competence

Variables	Mean	SD	Interpretation
Preparation	3.59	0.52	Highly Competent
Delivery and Students' Support	3.62	0.50	Highly Competent
Generalization and Revision	3.52	0.56	Highly Competent
Professional Development	3.52	0.56	Highly Competent
School Development	3.45	0.51	Highly Competent
Innovating Education	3.56	0.51	Highly Competent
Overall	3.54	0.53	Highly Competent

Table 1 shows that teachers have a high overall level of digital competence, with an overall mean of 3.54, indicating that they consistently use digital technology in lesson planning, instructional delivery, assessment, learner support, communication, collaboration, and professional development. The highest rated dimension is Delivery and Students' Support, with a mean of 3.62, showing that teachers effectively use digital tools to deliver instruction, assess learning, provide individualized support, and address diverse learner needs. This suggests that technology has become an essential part of teachers' daily professional practices rather than merely a tool for presenting lessons. In contrast, School Development obtained the lowest mean of 3.45, interpreted as Competent, indicating that teachers are less involved in school wide digital initiatives, ICT planning, policy development, and institutional decision-making despite being confident in using technology within their classrooms. The findings highlight the need to strengthen teacher participation in strategic digital planning, collaborative leadership, and school wide technology initiatives to support sustained digital transformation and innovation.

Problem 2. To what extent is the student engagement as to Collaboration and support, technology-supported learning, and the learning environment?

Table 2
Summary Distribution of the Extent of Students' Engagement

Variable	Mean	SD	Interpretation
Collaboration and Support	3.24	0.70	Engaged
Technology-supported Learning	3.09	0.63	Engaged
Learning Environment	3.03	0.64	Engaged
Overall	3.12	0.66	Engaged

Table 2 shows that students are generally engaged in technology supported learning, with an overall mean of 3.12, indicating that they participate in learning activities involving technology but that their engagement is not always consistent or sustained. The highest rated dimension is Collaboration and Support, with a mean of 3.24, showing that students are more engaged when teachers provide guidance, encouragement, interactive activities, and opportunities for collaboration through digital platforms. This suggests that technology becomes more meaningful when combined with teacher support and activities that promote communication, feedback, problem solving, and active participation. In contrast, Learning Environment obtained the lowest mean of 3.03, although it remained within the Engaged interpretation, indicating that digital learning environments may still have limitations in accessibility, personalization, interaction, and opportunities for independent exploration. The findings suggest that effective technology integration requires not only access to digital tools but also well-structured activities, appropriate guidance, interactive content, equitable access, and learning opportunities that respond to students' diverse needs and encourage sustained participation.

Problem 3. Is there a significant relationship between the teachers' digital competence and students' engagement?

Table 3
Result of the Test on the Relationship Between the Teachers' Digital Competence and Students' Engagement

Teacher’s Digital Competence	Engagement						Overall
	Collaboration And Support		Technology-Sup-ported Learning		Learning En-vironment		
Variables	r-value	p-value	r-value	p-value	r-value	p-value	
Preparation	0.032	0.640*	0.008	0.904*	0.037	0.596*	NS
Delivery and Students’ Support	0.155	0.024**	0.094	0.170*	0.072	0.294*	S
Generalization and Re-vision	0.008	0.912*	0.001	0.989*	0.036	0.601*	NS
Professional Develop-ment	0.091	0.188*	0.059	0.395*	0.088	0.203*	NS
School Development	0.023	0.740*	0.98	0.156*	0.013	0.852*	NS
Innovative Education	0.088	0.200*	0.017	0.806*	0.055	0.424*	NS

Table 3 shows that most dimensions of teachers' digital competence have weak and statistically non-significant relationships with students' engagement, indicating that high digital competence alone does not necessarily result in higher student engagement. Preparation, Generalization and Revision, Professional Development, School Development, and Innovating Education showed no significant relationships with Collaboration and Support, Technology Supported Learning, and Learning Environment. However, Delivery and Students' Support showed a significant but weak positive

relationship with Collaboration and Support, with an r value of 0.155 and a p value of 0.024, suggesting that effective digital technology use in instruction, learner monitoring, guidance, and support is associated with greater student participation in collaborative and supportive learning activities. The findings indicate that the quality and manner of technology integration are more important than simply having digital tools available, as students are more likely to engage when technology is used to encourage communication, collaboration, feedback, active participation, and learner centered activities. Thus, professional development should focus not only on teachers' technical skills but also on pedagogical strategies that promote meaningful and interactive technology enhanced learning.

4. Conclusion and Recommendations

Conclusion

The study concluded that delivery and student's support encompass how instruction is delivered in real time including the teachers' use of digital tools or applications through MS Excel during lesson. Also, teachers who provide clear digital instructions and expectations for all tasks and lessons prove students' engagement and attention. Further, technology enhances collaborative learning by providing authentic interactive environments that improve communication and accountability among peers. Students use and value technology as a catalyst for collaboration. It emphasizes collaboration and assistance for developing student's participation. Moreover, it helps students enhance teamwork and cooperation in school projects to maintain engagement in the learning environment.

Recommendations

Based on the findings and conclusions of the study, the following are recommended:

1. Teachers should exert efforts in providing more dynamics and student-centered classes by watching online tutorials or videos to learn new knowledge which examine their readiness to use ICT for education and professional development in digital capabilities.
2. Teachers should utilize technology to promote collaborative learning through digital platforms, interactive communication using tools and the personalized learning experiences in facilitating learning environment. They should explore topics that interest students beyond classroom lessons.
3. Teachers should utilize digital tools or applications such as interactive whiteboards, educational games and others to improve student engagement and attention, they should employ educational videos and animation, digital channels such as email, chat messages through private message or group chats to reinforce lesson concepts.

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