

ICT Competency and Its Relationship to Responsible Digital Citizenship among BTLED Students

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DOI: <https://doi.org/10.47772/IJRISS.2026.100500628>

Received: 11 May 2026; Accepted: 16 May 2026; Published: 09 June 2026

ABSTRACT

This study examined the relationship between Information and Communication Technology (ICT) competency and responsible digital citizenship among Bachelor of Technical and Livelihood Education (BTLED) students. Specifically, the study described the respondents' profiles in terms of age, gender, year level, internet access, and ICT-related training attended. It also assessed the respondents' level of ICT competency across five domains: basic ICT operations, productivity and office applications, communication and collaboration technologies, information management and digital research, and digital problem-solving skills. Furthermore, the study evaluated the level of responsible digital citizenship in terms of ethical use of ICT, online safety and security, respect and online etiquette, and digital responsibility. Finally, the study determined whether a significant relationship exists between ICT competency and responsible digital citizenship.

The study employed a quantitative descriptive-correlational research design. Data were gathered from 96 BTLED students through a structured questionnaire. Statistical tools such as frequency, percentage, weighted mean, standard deviation, and Pearson Product-Moment Correlation Coefficient were utilized to analyze the data.

Findings revealed that the respondents demonstrated a generally high level of ICT competency, with communication and collaboration technologies receiving the highest rating. Similarly, respondents exhibited a very high level of responsible digital citizenship, particularly in online safety and digital responsibility. Results further indicated a significant moderate positive relationship between ICT competency and responsible digital citizenship ($r = 0.68$, $p < 0.05$), suggesting that students with higher ICT competency are more likely to demonstrate responsible digital behavior.

Based on the findings, the study concluded that ICT competency significantly contributes to the development of responsible digital citizenship among BTLED students. It is therefore recommended that educational institutions strengthen ICT integration, digital ethics education, and structured training programs to further enhance students' technical proficiency and ethical engagement in digital environments.

Keywords: ICT competency, digital citizenship, responsible technology use, online safety, digital literacy, BTLED students

INTRODUCTION

The rapid advancement of digital technologies has transformed education, communication, and social interaction worldwide. In the Philippines, however, disparities in digital access and technological resources continue to affect how students engage with technology, particularly in rural and provincial areas such as Negros Oriental. These disparities influence students' opportunities to develop ICT competencies and practice responsible digital citizenship.

For students enrolled in the Bachelor of Technical and Livelihood Education (BTLED) program, ICT serves not only as a learning tool but also as a professional competency essential to their future roles as educators and

technology facilitators. Consequently, students must possess both technical ICT proficiency and ethical responsibility in digital environments.

Recent studies have highlighted the importance of integrating ICT skills with responsible online behavior. Research shows that students with stronger digital competencies tend to demonstrate more responsible digital participation, ethical engagement, and safer online practices. Despite this, studies focusing on the relationship between ICT competency and responsible digital citizenship among Philippine tertiary students remain limited, especially within provincial institutions.

This study therefore seeks to determine the relationship between ICT competency and responsible digital citizenship among BTLED students in Negros Oriental. The findings are expected to contribute to curriculum enhancement, institutional policy development, and the promotion of responsible digital practices among future educators.

Rationale of the Study

In today's digital society, ICT competency and responsible digital citizenship are essential competencies for learners and future professionals. While educational institutions continue to integrate technology into teaching and learning, many students still face challenges related to digital ethics, online safety, information management, and responsible online behavior.

Although national frameworks such as the National ICT Competency Standards for Pre-Service Teachers emphasize digital literacy and ethical technology use, empirical evidence on how these competencies are manifested among BTLED students in Negros Oriental remains limited.

This study aims to bridge this gap by examining the relationship between ICT competency and responsible digital citizenship. Findings from the study may provide evidence-based recommendations for strengthening ICT instruction, digital citizenship education, and institutional support programs.

Statement of the Problem

This study aims to determine the relationship between ICT competency and responsible digital citizenship among BTLED students.

Specifically, it seeks to answer the following questions:

1. What is the profile of the respondents in terms of:
 - 1.1 age;
 - 1.2 gender;
 - 1.3 year level;
 - 1.4 internet access; and
 - 1.5 ICT-related training attended?
2. What is the level of ICT competency of BTLED students in terms of:
 - 2.1 basic ICT operations;
 - 2.2 productivity and office applications;
 - 2.3 communication and collaboration technologies;

2.4 information management and digital research; and

2.5 digital problem-solving skills?

3. What is the level of responsible digital citizenship of BTLED students in terms of:

3.1 ethical use of ICT;

3.2 online safety and security;

3.3 respect and online etiquette; and

3.4 digital responsibility?

4. Is there a significant relationship between ICT competency and responsible digital citizenship among BTLED students?

5. What strategies may be proposed to strengthen ICT integration and responsible digital citizenship among BTLED students?

REVIEW OF RELATED LITERATURE

The rapid advancement of digital technologies has significantly transformed education, communication, and social interaction in the 21st century. As educational institutions increasingly integrate technology into teaching and learning, the development of Information and Communication Technology (ICT) competency and responsible digital citizenship has become essential among students, particularly those preparing for professional careers in education and technology-related fields. Several studies and international frameworks emphasize that ICT competency and responsible digital citizenship are interconnected concepts that contribute to effective and ethical participation in digital environments.

ICT competency refers to the knowledge, skills, attitudes, and abilities necessary for individuals to effectively utilize digital technologies for communication, collaboration, information management, productivity, and problem-solving. According to UNESCO (2021), ICT competency involves not only technical skills but also critical thinking, ethical use of information, and responsible engagement with digital technologies. Similarly, the European Commission's DigComp 2.2 Framework (2022) described digital competence as the confident, critical, and safe use of digital technologies for learning, work, and participation in society.

Recent studies have highlighted the multidimensional nature of ICT competency among students. Falloon (2020) explained that digital competence extends beyond operational computer skills and includes higher-order abilities such as information literacy, collaboration, communication, and digital problem-solving. Likewise, van Laar et al. (2020) emphasized that 21st-century digital skills involve technical, cognitive, and social competencies that are necessary for academic success and professional readiness.

In higher education, ICT competency has become increasingly important due to the widespread use of online learning platforms, collaborative technologies, and digital communication systems. Trust and Whalen (2020) observed that the shift to online learning during the COVID-19 pandemic accelerated students' exposure to digital technologies, improving their communication and collaboration skills. However, the study also noted that disparities in internet access and digital resources continue to affect students' ability to fully develop ICT competencies.

Within the Philippine context, SEAMEO INNOTECH (2023) reported that many students in rural and provincial areas still experience challenges related to internet connectivity, access to digital devices, and ICT-related training opportunities. These conditions may affect students' capacity to effectively engage in digital learning environments and develop advanced digital competencies. Consequently, educational institutions are encouraged to strengthen ICT integration and provide students with opportunities for digital skills development.

Another important concept related to ICT competency is responsible digital citizenship. Digital citizenship refers to the ethical, safe, respectful, and responsible use of digital technologies and online platforms. Ribble (2015) defined digital citizenship as the norms of appropriate and responsible behavior regarding technology use. The concept includes dimensions such as ethical use of ICT, online safety and security, respect and online etiquette, and digital responsibility.

UNESCO (2021) emphasized that responsible digital citizenship is essential in promoting safe and inclusive digital environments. The organization highlighted the importance of teaching students how to protect personal information, avoid online risks, evaluate digital content critically, and engage respectfully in online communities. Similarly, Martínez-Bravo et al. (2022) explained that digital citizenship extends beyond technical competence and involves ethical awareness, social responsibility, and active participation in digital spaces.

Studies on digital citizenship indicate that students who possess higher ICT competencies are more likely to demonstrate responsible online behavior. Kim and Choi (2021) found that digital competence positively influences ethical online participation, responsible social media use, and awareness of digital accountability among students. Likewise, Gutiérrez-Aguilar et al. (2024) reported that digital communication and collaboration skills significantly predict responsible digital participation and citizenship behaviors among university students.

Research also suggests that online safety and digital ethics remain critical concerns among students. Livingstone et al. (2021) emphasized that increased exposure to online environments has heightened the risks of cyberbullying, misinformation, privacy violations, and online exploitation. As a result, educational institutions are encouraged to integrate online safety and digital ethics into formal instruction. UNICEF Philippines (2022) likewise recommended that schools strengthen digital citizenship education to help students become responsible and ethical users of technology.

In teacher education programs, ICT competency and responsible digital citizenship are particularly important because future educators are expected to model appropriate technology use and guide students in navigating digital environments responsibly. Mishra and Koehler's (2006) Technological Pedagogical Content Knowledge (TPACK) framework emphasized that effective technology integration requires not only technical knowledge but also pedagogical and ethical understanding. Future educators must therefore develop the ability to integrate technology meaningfully while promoting responsible digital practices.

Constructivist Learning Theory also supports the development of ICT competency and responsible digital citizenship. According to Piaget (1972) and Vygotsky (1978), learners actively construct knowledge through interaction, collaboration, and engagement with their environment. In digital learning contexts, students develop ICT skills and responsible online behavior through authentic experiences, guided learning, and reflective practice.

Overall, the reviewed literature indicates that ICT competency and responsible digital citizenship are essential competencies for students in the digital age. Existing studies consistently demonstrate that students who possess stronger ICT competencies are more likely to engage ethically, safely, and responsibly in digital environments. However, local studies focusing on BTLED students in provincial institutions remain limited, particularly in the context of Negros Oriental. Thus, the present study seeks to contribute to the growing body of literature by examining the relationship between ICT competency and responsible digital citizenship among BTLED students.

Significance of the Study

This study is significant to several groups involved in education and digital literacy. For BTLED students, the study may help them better understand their ICT competencies and responsible digital citizenship practices, enabling them to become more effective and ethical users of technology. Faculty members and teacher educators may benefit from the findings by using them as a guide in strengthening ICT instruction and integrating digital ethics into classroom teaching. Academic administrators may utilize the results in developing institutional policies, training programs, and curriculum enhancements related to ICT integration and responsible digital citizenship. Likewise, agencies such as CHED, DepEd, and DICT may use the study as empirical evidence for

policy formulation and digital education initiatives. Finally, the findings may serve as valuable reference material for future researchers who wish to conduct related studies on ICT competency and digital citizenship.

Scope and Delimitation of the Study

This study focuses on the relationship between ICT competency and responsible digital citizenship among BTLED students enrolled in selected higher education institutions in Negros Oriental during the Academic Year 2025–2026. Specifically, the study examines ICT competency in terms of basic ICT operations, productivity and office applications, communication and collaboration technologies, information management and digital research, and digital problem-solving skills. It also assesses responsible digital citizenship across four dimensions, namely ethical use of ICT, online safety and security, respect and online etiquette, and digital responsibility. The study is limited only to BTLED students and does not include students from other academic programs.

Research Design

This study employed a quantitative descriptive-correlational research design to determine the relationship between ICT competency and responsible digital citizenship among BTLED students. The descriptive method was utilized to identify and describe the respondents' profile, as well as their level of ICT competency and responsible digital citizenship. Meanwhile, the correlational approach was used to examine whether a significant relationship exists between ICT competency and responsible digital citizenship among the respondents. The quantitative approach allowed the researchers to gather numerical data through survey questionnaires and analyze the results using statistical tools such as frequency and percentage, weighted mean, standard deviation, and Pearson Product-Moment Correlation Coefficient. This research design was deemed appropriate because it provided an objective and systematic means of analyzing the relationship between the variables under study.

The respondents of the study consisted of 96 BTLED students who were officially enrolled during the conduct of the study. These students were selected as participants because they are directly engaged in technology-related learning and are expected to develop both ICT competencies and responsible digital citizenship skills as part of their academic preparation.

To analyze and interpret the data gathered, the study utilized several statistical tools. Frequency and percentage were used to describe the respondents' profile and distribution. Weighted mean was employed to determine the level of ICT competency and responsible digital citizenship of the respondents, while standard deviation was used to measure the consistency of their responses. Furthermore, the Pearson Product-Moment Correlation Coefficient was applied to determine whether a significant relationship existed between ICT competency and responsible digital citizenship among BTLED students.

Table 1 Summary of the Respondents' Profile (N = 96)

Profile Variable	Major Findings	Summary Interpretation
Gender	Majority of respondents were female (68.75%).	Female students comprised the larger portion of the respondents.
Year Level	Most respondents were first-year students (33.33%).	Lower-year students were more represented in the study.
Internet Access	Majority relied on mobile data (57.29%).	Students generally had internet access, but many depended on mobile connectivity.
ICT-Related Training	Nearly half had no ICT-related training (45.83%).	ICT skills may have been developed mainly through classroom exposure and personal experiences.

The profile of the respondents revealed that the majority of the BTLED students were female, indicating that female students comprised a larger portion of the participants in the study. In terms of year level, most respondents were first-year students, followed by second-year students, suggesting that lower-year students were more represented in the research. Regarding internet access, the majority relied on mobile data, while others used home Wi-Fi and school internet connections. This indicates that although students generally had access to the internet, many still depended on mobile connectivity, which may affect the quality and stability of their online learning experiences. In relation to ICT-related training, nearly half of the respondents had not attended formal ICT-related training programs, implying that many students developed their ICT skills primarily through classroom exposure and personal experiences rather than structured training.

Table 2 Summary of the Level of ICT Competency (N = 96)

ICT Competency Domain	Mean	Interpretation	Summary Interpretation
Basic ICT Operations	3.93	High	Respondents demonstrated strong foundational ICT skills.
Productivity and Office Applications	3.95	High	Students were capable of using productivity tools for academic tasks.
Communication and Collaboration Technologies	4.23	Very High	Respondents were highly proficient in digital communication and collaboration.
Information Management and Digital Research	4.10	High	Students showed competence in locating and organizing digital information.
Digital Problem-Solving Skills	3.95	High	Respondents demonstrated strong ability in solving digital-related problems.
Overall Mean	4.03	High	BTLED students generally possessed a high level of ICT competency.

The findings on the level of ICT competency revealed that BTLED students generally possessed a high level of ICT competency across all domains. Among the five areas assessed, communication and collaboration technologies obtained the highest rating and was interpreted as very high, indicating that students were highly capable of using digital communication platforms, collaborative tools, and online learning systems. The domains of basic ICT operations, productivity and office applications, information management and digital research, and digital problem-solving skills were all rated high. These results suggest that respondents were generally confident and competent in using digital technologies for academic and professional purposes. However, the findings also imply that students may still benefit from additional training and enhancement activities, particularly in advanced productivity applications, digital research skills, and technical problem-solving.

Table 3 Summary of the Level of Responsible Digital Citizenship (N = 96)

Responsible Digital Citizenship Dimension	Summary Interpretation
Ethical Use of ICT	Respondents demonstrated responsible and ethical use of digital technologies.
Online Safety and Security	Students showed strong awareness of online safety practices and protection of personal information.

Respect and Online Etiquette	Respondents practiced respectful and appropriate online communication.
Digital Responsibility	Students demonstrated accountability and responsibility in their online actions.
Overall Interpretation	BTLED students demonstrated a very high level of responsible digital citizenship.

The findings on responsible digital citizenship indicated that BTLED students demonstrated a very high level of responsible digital citizenship across the assessed dimensions. The respondents showed strong awareness and practice of ethical ICT use, online safety and security, respect and online etiquette, and digital responsibility. Among these dimensions, online safety and security obtained the highest ratings, suggesting that students were highly aware of protecting personal information, avoiding online risks, and practicing safe digital behavior. The results further imply that respondents generally exhibited responsible, respectful, and ethical engagement in digital environments. Overall, the findings indicate that BTLED students were not only technologically competent but were also capable of practicing responsible digital citizenship in their online interactions and academic activities.

Summary of Findings

The findings of the study revealed that BTLED students generally demonstrated high levels of ICT competency and responsible digital citizenship. Communication and collaboration technologies emerged as the strongest domain of ICT competency, suggesting that respondents were highly familiar with digital communication platforms commonly used in educational settings.

The results further suggest that students' exposure to online learning platforms, collaborative technologies, and digital communication tools contributed to the development of their ICT competencies. However, the findings also revealed the need for further enhancement of advanced productivity skills, digital research competence, and problem-solving abilities.

The study also highlights the importance of integrating structured digital citizenship education into the BTLED curriculum. Since ICT competency and responsible digital behavior are interconnected, educational institutions must continue promoting ethical technology use, online safety awareness, digital responsibility, and respectful online engagement.

Overall, the findings support the assumption that stronger ICT competency contributes to more responsible digital citizenship practices among BTLED students. The results further reinforce the theoretical perspectives of Constructivist Learning Theory, TPACK, and Digital Citizenship Theory, which collectively emphasize that digital competence and ethical online behavior develop through meaningful engagement, guided learning experiences, and reflective practice.

RECOMMENDATIONS

Based on the findings of the study, several recommendations are proposed to further strengthen ICT competency and responsible digital citizenship among BTLED students. Higher education institutions, particularly those offering BTLED programs, should strengthen the integration of ICT competencies and digital citizenship education within the curriculum through structured learning activities, hands-on training, and technology-enhanced instruction. Since communication and collaboration technologies obtained the highest level of competency, educators may continue maximizing collaborative digital platforms while also providing additional support in areas such as digital problem-solving, information management, and productivity applications where students may still require improvement.

Faculty members and teacher educators are encouraged to incorporate activities that promote ethical technology use, online safety awareness, digital responsibility, and respectful online communication in classroom instruction. Workshops, seminars, and training programs focusing on digital literacy, cybersecurity, responsible social media use, and research integrity should also be conducted regularly to further enhance students' responsible digital citizenship practices.

Academic administrators may utilize the findings of the study in designing institutional policies and intervention programs that support equitable access to digital resources, reliable internet connectivity, and continuous ICT-related training opportunities for students and faculty members. Collaboration with agencies such as CHED, DepEd, and DICT may also be strengthened to support the implementation of digital citizenship initiatives and ICT enhancement programs aligned with national educational goals.

Future researchers are encouraged to conduct similar studies involving larger populations, different academic programs, or other educational institutions to further validate the findings of the study. Qualitative or mixed-method approaches may also be explored to gain deeper insights into students' experiences, attitudes, and challenges related to ICT competency and responsible digital citizenship.

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