

The Impact of Digital Literacy on the Research Skills of College Students: A Quantitative Study

Jevie P. Sature¹, Theo Anthony L. Paculanang² and Markdy Y. Orong³

¹College of Computer Studies, Misamis University, Ozamiz City, Philippines

Abstract:

This study explores the impact of digital literacy on enhancing research skills among college students at Misamis University. Using a descriptive sampling method, 315 students from various disciplines were surveyed about their perceptions of digital literacy and evaluated on their research skills. The findings show that digital literacy significantly improves students' ability to access academic databases, evaluate sources, and use digital tools for research. A perfect correlation between digital literacy and research skills highlights the need for integrating digital literacy education into the curriculum. The study recommends practical, hands-on training, regular content updates, and additional resources to further strengthen these skills.

Keywords: Digital Literacy, Research Skills, Educational Impact, Academic Performance

1. Introduction

Research has become essential for addressing critical societal challenges such as health, climate change, and food security, with decision-makers emphasizing its practicality and results-driven nature. Integrating research into undergraduate programs equips students with the skills to innovate and contribute to society, while strong research abilities are vital for success in advanced studies (Brunet et al., 2024; Rehana Banu et al., 2022). Advances in technology have further transformed research by providing easier access to diverse resources, enhancing efficiency compared to traditional library use (Hendriarto et al., 2021; Meriem Ouahidi, 2020). As a result, students with strong digital literacy skills are better prepared to evaluate and synthesize information, a crucial capability in higher education for academic success and meaningful contributions (Darmaji, 2023; Ussarn et al., 2022; Prasetyo et al., 2021).

Building on this foundation, today's education systems face the challenge of integrating digital media to enhance instructional quality and develop students' skills. Digital media enable teachers to present content in engaging and interactive ways, while investments in technology foster innovative teaching approaches and essential skills development (Rusydiyah et al., 2020). As technological advancements reshape how individuals learn and work, digital literacy has emerged as a vital skill for lifelong learning, helping students adapt to societal and workplace demands (Hernandez-de-Menendez et al., 2020; Khan et al., 2022). This is particularly critical in higher education, where digital literacy enhances research skills by enabling students to locate, evaluate, and utilize information effectively, preparing them to address complex global challenges like health crises, climate change, and food security (Sukarno & Widdah, 2020; Nurwahidah et al., 2021; Hasanah et al., 2022; Sukma, 2024).

Moreover, digital technologies and media have become integral to education, shaping how students learn and interact with information. Surrounded by tools like blogs, social networks, and video platforms, students require early education to develop critical thinking and analytical skills. Digital literacy, defined as the ability to locate and use information effectively online, is essential for academic and professional success, particularly in higher education, where it significantly impacts performance through online learning systems and information technology (Ata & Yıldırım, 2019; Haliza et al., 2024; Tejedor et al., 2020; Le et al., 2022). To meet the needs of Generation Z, digital natives who expect technology-

enhanced learning, educational institutions are incorporating interactive digital tools to improve instructional quality and engagement, while also investing in technology to optimize teaching and learning outcomes (Kurniawan et al., 2023; Anggraeni, 2023; Saleh, 2023; Wahyuni et al., 2023; Rizal et al., 2022; Arsari, 2022).

The COVID-19 pandemic further highlighted the importance of digital literacy, as online learning became essential, requiring both educators and students to adapt to digital tools and platforms (Sajidan et al., 2023; Alakrash & Razak, 2021). This shift underscored the need to recognize students' diverse experiences with technology and to equip them with well-rounded skills. Teachers play a pivotal role in this process by integrating various digital technologies into their lessons, fostering students' ability to navigate and utilize digital tools effectively (Peng & Yu, 2022; Pangrazio et al., 2020; Tham et al., 2021).

While previous studies have examined the broader effects of digital literacy on academic performance, there is limited research on how digital literacy directly influences research skills. Research skills, such as evaluating sources, data collection, and synthesizing information, are vital for academic success and future careers. This study addresses this gap by quantitatively exploring the relationship between digital literacy and research skills among college students at Misamis University. By examining students' perceptions of digital literacy and its impact on their research practices, the study aims to provide insights for educators and institutions, highlighting the importance of digital literacy training in preparing students for academic research and societal contributions.

This study examines how digital literacy enhances the research skills of college students at Misamis University, focusing on their ability to access, evaluate, and use diverse information sources. It explores students' perceptions of digital literacy and its impact on research practices, highlighting key skills like information retrieval, source evaluation, and data organization. The study aims to provide insights for educators and institutions to improve digital literacy training, helping students build the skills and confidence needed to succeed in academic research and meet complex academic demands.

This study is guided by two theoretical frameworks: Constructivist Learning Theory and Digital Literacy Theory. Constructivist Learning Theory emphasizes the active role of learners in constructing knowledge through interactions with their environment, highlighting how digital tools and research practices foster critical evaluation, information synthesis, and problem-solving skills (Chuang, 2021; Hof, 2020; Mohammed & Kinyo, 2020). Digital Literacy Theory, on the other hand, focuses on the competencies required to locate, evaluate, and use information effectively in a digital context, supporting skills such as identifying credible sources and synthesizing information for academic tasks (Marín & Castaneda, 2023; Buckingham, 2020). Together, these frameworks provide a comprehensive understanding of how digital literacy enhances students' research capabilities and academic success.

2. Methodology

Data collection for this study will be conducted online using Google Forms, distributed via social media platforms like Facebook groups and Messenger chats, commonly used by Misamis University students. The survey will capture demographic data, social media usage, privacy awareness, and behaviors related to personal information protection, using Likert-scale and closed-ended questions. A pilot test will be conducted to ensure clarity and effectiveness before full deployment.

For data analysis, the study will employ statistical methods, including the Chi-Square Test to explore associations between categorical variables (e.g., year levels and departments) and digital literacy, the Simple T-Test to compare research skills across different digital literacy levels, and descriptive statistics to summarize findings. These methods will provide a comprehensive understanding of the relationship between digital literacy and research skills, offering insights into how digital competencies influence academic practices.

3. Results and Discussion

The study included 315 undergraduate students from various academic programs at Misamis University.

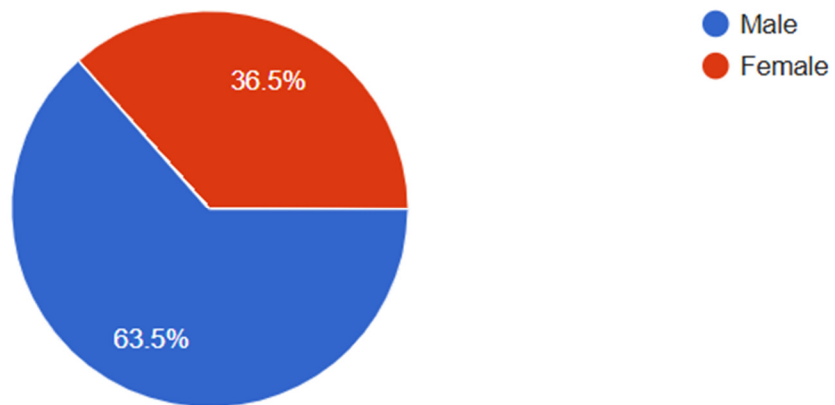


Figure 1. Sex Distribution

Among the respondents, 63.5% (200 students) were male, while 36.5% (115 students) were female. This distribution shows a higher proportion of male students in the sample, providing diverse perspectives on research skills and perceptions of digital literacy. Such representation is valuable for exploring potential gender-based differences in these areas, although the study mainly emphasizes overall trends in the student population.

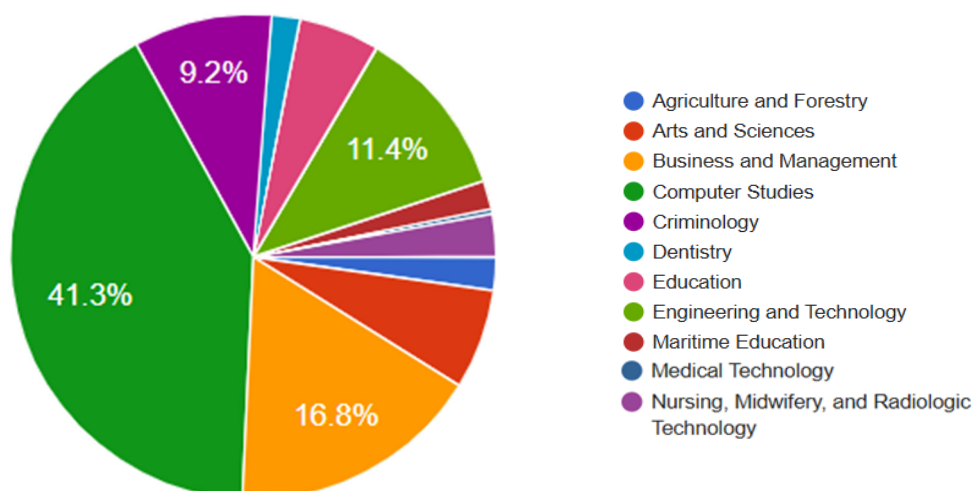


Figure 2. Colleges Represented

The participants came from different colleges, with most from the College of Computer Studies (41.3%), followed by the College of Business and Management (16.8%) and the College of Engineering and Technology (11.4%). Smaller groups were from Medical Technology (0.3%), Maritime Education (1.9%), and Dentistry (1.9%). This mix of students from various fields gives a broad view of their research skills and understanding of digital literacy. The variety helps show how students from different academic backgrounds use and improve their research abilities with digital tools.

Table 1. Evaluation of Research Skills

Statements	Mean	Interpretation
I am aware that information can be obtained through various sources, such as electronic media, images, audio, and video.	4.184	Agree
I understand that a primary source is the original record of work related to a field or literature.	4.242	Strongly Agree

I recognize that a secondary source discusses or analyzes the work of others.	4.232	Strongly Agree
I use resources beyond my institution’s library, like inter-library loan services, to access additional information.	4.145	Agree
I identify and search for synonyms, themes, or keywords relevant to my topic to find information effectively.	4.074	Agree
I consult general resources like dictionaries or encyclopedias to clarify terminology related to my topic.	4.1	Agree
I recognize that the timeliness of information affects its relevance to my research topic.	4.103	Agree
I use the main ideas from gathered information to support my research topic.	4.194	Agree
I combine ideas from multiple sources to develop new insights.	4.2	Agree
I can create my own conclusions based on the information I have collected.	4.184	Agree
overall	4.166	Agree

Note: 4.20-5.0 (Strongly Agree); 3.40-4.19 (Agree); 2.60-3.39 (Neutral); 1.80-2.59 (Disagree); 1.0-1.79 (Strongly Disagree)

The table presents the overall mean scores, and interpretation of various statements related to information literacy skills. The results indicate a strong understanding among respondents, with mean scores suggesting high agreement on several aspects. They demonstrate a clear awareness of different information sources, distinguishing between primary and secondary sources (mean = 4.242 and 4.232 respectively). Respondents actively use resources beyond their institution’s library, such as inter-library loan services (mean = 4.145). They effectively search for relevant keywords and themes (mean = 4.074) and consult general resources like dictionaries or encyclopedias to clarify terminology (mean = 4.1). Respondents recognize the importance of the timeliness of information (mean = 4.103) and use main ideas from gathered data to support their research (mean = 4.194). They also combine ideas from multiple sources to generate new insights (mean = 4.2) and create their own conclusions based on the collected information (mean = 4.184). These results highlight a high level of proficiency in information literacy skills among the respondents, reflecting their ability to effectively access, evaluate, and utilize information for academic and research purposes.

Table 2. Perception of Digital Literacy

Statements	Mean	Interpretation
My digital literacy training has helped me effectively access and use academic databases.	4.203	Strongly Agree
My digital literacy skills make it easier to find credible sources for assignments and research projects.	4.194	Agree
I consider digital literacy skills essential for organizing and managing my research information.	4.207	Strongly Agree

Due to my digital literacy training, using digital tools for research (e.g., citation managers, online libraries) feels more intuitive.	4.097	Agree
My digital literacy training has made me more efficient in completing research tasks.	4.158	Agree
I believe my digital literacy skills have improved the quality of my research projects.	4.077	Agree
My digital literacy skills have boosted my confidence in conducting independent research.	4.01	Agree
I regularly use digital literacy skills in my coursework and assignments.	4.09	Agree
My digital literacy skills help me identify and avoid unreliable sources.	4.171	Agree
I believe digital literacy will be valuable for my future career, especially in research-related tasks.	4.203	Strongly Agree
overall	4.166	Agree

Note: 4.20-5.0 (Strongly Agree); 3.40-4.19 (Agree); 2.60-3.39 (Neutral); 1.80-2.59 (Disagree); 1.0-1.79 (Strongly Disagree)

Respondents strongly believe that digital literacy training has significantly enhanced their ability to access and use academic databases effectively (mean = 4.203). They agree that these skills make it easier to find credible sources for assignments and research projects (mean = 4.194). Digital literacy is considered essential for organizing and managing research information (mean = 4.207), and using digital tools for research tasks has become more intuitive due to their training (mean = 4.097). Additionally, respondents feel more efficient in completing research tasks as a result of their digital literacy training (mean = 4.158) and believe that it has improved the quality of their research projects (mean = 4.077). The training has also boosted their confidence in conducting independent research (mean = 4.01), and they regularly apply these skills in their coursework and assignments (mean = 4.09). Furthermore, they strongly agree that digital literacy skills help in identifying and avoiding unreliable sources (mean = 4.171) and recognize the value of these skills for their future career, especially in research-related tasks (mean = 4.203).

Table 3

Variables	r	Interpretation	p-value	Interpretation
Digital literacy	1	Perfect Linear	0.000	Significant
Research skills				

In Table 4, the impact of digital literacy on research skills is evaluated using the Pearson product-moment correlation coefficient. The correlation coefficient, $r=1$, indicates a perfect linear relationship between digital literacy and research skills; as one variable changes, the other changes in a perfectly linear manner. The p-value of 0.000 is well below the common significance level of 0.05, confirming that the relationship between digital literacy and research skills is statistically significant. This suggests that improvements in digital literacy are strongly associated with enhanced research skills among the

respondents. Consequently, we reject the null hypothesis, which posits no relationship, indicating that digital literacy significantly influences the development of research skills.

The results indicate strong proficiency in information literacy skills among respondents, with high agreement on understanding different information sources, effectively searching for relevant keywords, and distinguishing between primary and secondary sources. Digital literacy training significantly enhances their ability to access academic databases, find credible sources, and use digital tools for research tasks. It also boosts their confidence and improves the quality of their research projects. The correlation analysis confirms a perfect linear relationship between digital literacy and research skills, suggesting that improvements in digital literacy contribute to enhanced research capabilities among the respondents.

4. Conclusion

This study highlights the significant role of digital literacy in enhancing research skills among college students from various disciplines. The findings demonstrate that students, regardless of their academic background, exhibit strong proficiency in information literacy, including effectively distinguishing between sources, searching for relevant information, and synthesizing data. The results further confirm that digital literacy training has a direct and positive impact on students' ability to access academic databases, evaluate credible sources, and utilize digital tools for research. The perfect correlation between digital literacy and research skills underscores the importance of digital literacy training in improving research capabilities and boosting students' confidence. These insights emphasize the need for universities to continue integrating digital literacy education into their curricula to better equip students for academic success and future professional endeavors.

5. Recommendations

To enhance research skills, Misamis University should integrate digital literacy training across all academic programs, focusing on practical, hands-on learning to improve students' ability to use digital tools effectively. Regular updates to training content are essential to keep students informed about the latest digital resources and research technologies. Additionally, workshops, seminars, and online resources can help reinforce key skills and encourage students to apply digital tools confidently in their research. Future research should assess the effectiveness of these initiatives and explore their impact on diverse student populations. These efforts will better prepare students for academic research and future career success.

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