



DIGITAL LITERACY AMONG BACHELOR OF EDUCATION STUDENTS AT THE OPEN UNIVERSITY OF SRI LANKA

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Abstract

The widespread use of Information and Communication Technologies (ICT) in the 21st century necessitates strong digital literacy skills for success in education, work, and life. This study aimed to examine digital literacy among Bachelor of Education (B.Ed.) students at the Open University of Sri Lanka (OUSL), an open and distance learning (ODL) institution. While the program equips students with basic ICT skills, B.Ed. graduates are expected to be proficient in using digital tools for effective learning experiences. The following objectives were developed to achieve the aim of the study: identify the various digital literacy skills possessed by OUSL's B.Ed. students, such as information literacy, technology operation and collaboration, problem-solving and critical thinking, and safety and security; and determine the differences among students based on their gender. This study employed a survey design with a questionnaire distributed to a purposive sample of 40 B.Ed. students across different program years. The questionnaire assessed five key digital literacy areas: information literacy, technology operations and collaboration, problem-solving and critical thinking, and safety and security. Non-parametric tests were used due to the non-normal distribution of data. The analysis revealed no significant gender-based differences in digital literacy skills across all assessed areas. These findings suggest that both male and female B.Ed. students at OUSL possess comparable levels of digital literacy. While these results advocate for maintaining a gender-neutral approach to digital literacy education, further qualitative research is recommended to explore individual challenges and tailor support mechanisms. This comprehensive approach ensures an inclusive learning environment that fosters equitable skill development for all students.

Keywords: Digital Literacy, Gender Differences Open and Distance Learning (ODL)

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INTRODUCTION

The Fourth Industrial Revolution has made Information and Communication Technologies (ICT) ubiquitous in all aspects of life. Universities must equip their students with ICT skills and digital literacy to prepare them for the workforce, lifelong learning, and responsible participation in our technology-driven world. Traditional methods of information gathering are no longer sufficient. The explosion of online publications necessitates a new skillset: digital literacy. This encompasses critical thinking, information management, and ethical values needed to navigate the vast online landscape (Brankov, 2022). The internet and digital revolution have significantly impacted how students learn and integrate technology. Technology has transformed communication, collaboration, problem-solving, and access to information (Simpson & Obdalova, 2014). Mastering digital literacy, a 21st-century skill, is essential for undergraduate students to succeed in this new paradigm. Education must move beyond traditional methods and embrace digital formats to leverage the vast array of online learning resources available across various disciplines.

Digital literacy has become an essential skill set for both educators and students in the modern world. Educators need this competency to effectively integrate technology into their teaching practices, fostering a richer learning environment for students. Students, on the other hand, require digital literacy skills to navigate the vast online resources available, participate actively in online learning platforms, and prepare themselves for the demands of a digital workplace. However, digital literacy goes beyond mere technical proficiency. It encompasses a multifaceted skillset that includes critical thinking, information evaluation, effective communication, and the ability to create engaging content using various digital tools. In today's digital age, where technology permeates all aspects of life, possessing strong digital literacy is no longer a luxury but a necessity for success in education, work, and social participation (Martin, 2017; UNESCO 2018; Smith & Curtin, 2020)

The Faculty of Education at the Open University of Sri Lanka offers a Bachelor of Education programme in an open and distance learning (ODL) mode. To prepare new students for this ODL system, the programme requires all incoming students to complete the Continue education courses which provides basic ICT and digital skills. However, B.Ed. graduates are expected to be proficient in



using digital tools and resources to create engaging and effective learning experiences. Therefore, it is crucial to investigate the extent of digital literacy among undergraduate B.Ed. students.

Aim and objectives: This research aims to investigate the digital literacy skills of B.Ed. students at the Open University of Sri Lanka (OUSL). The following objectives are formulated to achieve the aim of the study:

- To identify the various digital literacy skills, such as information literacy, technology operation and collaboration, problem-solving and critical thinking, and safety and security, possessed by B.Ed. students at OUSL.
- To determine the differences among students based on their gender.

METHODOLOGY

This study employed a survey research design with a questionnaire to collect data from a sample of Bachelor of Education (B.Ed.) students at the Open University of Sri Lanka (OUSL). A purposive sampling technique was used to select 40 B.Ed. students from different years of the programme. A structured questionnaire was developed based on the research objectives and validated for both face and content validity. A pilot survey with 10 students ensured the questionnaire's clarity and comprehensibility. It consisted of five sections: *Information Literacy; Technology Operations and Concepts; Communication & Collaboration; Problem Solving & Critical Thinking; and Safety and Security*. Data analysis was aligned with the research objectives. SPSS version 26 was used for data analysis. The following non-parametric statistical tests were used due to the non-normal distribution of the data. A significance level of $\alpha = 0.05$ was applied to all statistical tests:

Objective 1: Kruskal-Wallis H test compared the median scores of B.Ed. students across different digital literacy skills areas, considering gender differences.

Objective 2: Mann-Whitney U test compared median scores between male and female students for each digital literacy skill.

RESULTS AND DISCUSSION

The Digital Literacy Skills Possessed by B.Ed. Students at OUSL

To identify the various digital literacy skills possessed by B.Ed. students at OUSL, the Kruskal-Wallis H test was used to compare the median scores across different digital literacy skill areas, including information literacy, technology operation and collaboration, problem-solving and critical thinking, and safety and security. Table 1 presents the ranks for each digital literacy skill area based on gender among Bachelor of Education (B.Ed.) students at the Open University of Sri Lanka (OUSL). According to table 1, the information literacy: female: mean rank = 19.57, and male: mean rank = 22.95, technology operation and concepts: female: mean rank = 19.28, and male: mean rank = 23.73, communication & collaboration: female: mean rank = 20.10, and male: mean rank = 21.55, problem solving & critical thinking: female: mean rank = 19.41, and male: mean rank = 23.36, and safety and security: female: mean rank = 20.14, and male: mean rank = 21.45.



Table 1
The ranks for each digital literacy skill area based on gender.

	Gender	N	Mean Rank
Information literacy	Female	29	19.57
	Male	11	22.95
	Total	40	
Technology Operation and concepts	Female	29	19.28
	Male	11	23.73
	Total	40	
Communication & Collaboration	Female	29	20.10
	Male	11	21.55
	Total	40	
Problem solving & Critical thinking	Female	29	19.41
	Male	11	23.36
	Total	40	
Safely and Security	Female	29	20.14
	Male	11	21.45
	Total	40	

These ranks indicate the average positions of female and male B.Ed. students in each digital literacy skill area. It appears that male students have slightly higher mean ranks in most skill areas compared to female students. However, to determine if these differences are statistically significant, further The Kruskal-Wallis H test was conducted to assess the differences in digital literacy skills among Bachelor of Education (B.Ed.) students at the Open University of Sri Lanka (OUSL) based on gender. Table 2 presents the test statistics for each digital literacy skill area:

Table 2
The test statistics for each digital literacy skill area:

	Information literacy	Technology Operation and concepts	Communication & Collaboration	Problem solving & Critical thinking	Safely and Security
Kruskal-Wallis H	.722	1.235	.131	.971	.109
df	1	1	1	1	1
Asymp. Sig.	.396	.266	.718	.324	.741

With reference to the Table 2, information literacy, the Kruskal-Wallis H statistic is 0.722 with 1 degree of freedom, yielding a p-value of 0.396. This suggests that there is no significant difference in information literacy scores among B.Ed. students based on gender ($p > 0.05$). For technology operation and concepts, the Kruskal-Wallis H statistic is 1.235 with 1 degree of freedom, yielding a p-value of 0.266. Similarly, there is no significant difference in technology operation and concepts scores among B.Ed. students based on gender ($p > 0.05$). For the communication & collaboration, the Kruskal-Wallis H statistic is 0.131 with 1 degree of freedom, yielding a p-value of 0.718. There is no



significant difference in communication & collaboration scores among B.Ed. students based on gender ($p > 0.05$). Moreover, the problem solving & critical thinking, the Kruskal-Wallis H statistic is 0.971 with 1 degree of freedom, yielding a p-value of 0.324. Similarly, there is no significant difference in problem solving & critical thinking scores among B.Ed. students based on gender ($p > 0.05$). For safety and security, the Kruskal-Wallis H statistic is 0.109 with 1 degree of freedom, yielding a p-value of 0.741. There is no significant difference in safety and security scores among B.Ed. students based on gender ($p > 0.05$). These findings indicate that there are no significant differences in digital literacy skills among B.Ed. students at OUSL based on gender across all skill areas assessed.

The Gender Differences in Digital literacy Skills among B.Ed. Students

To assess the differences in digital literacy skills among Bachelor of Education (B.Ed.) students at the Open University of Sri Lanka (OUSL), several non-parametric tests were employed. Mann-Whitney U test is used to compare the median scores of digital literacy skills between male and female students, and Kruskal-Wallis H test is used to compare the median scores of digital literacy skills among different age groups and to compare the median scores of digital literacy skills among different levels of study.

Digital Literacy Skills between Male and Female Students

The Mann-Whitney U test compares the median scores of digital literacy skills between male and female students. Table 3 presents the ranks obtained from this test, highlighting the differences in digital literacy skills between these two groups.

Table 3

The ranks table of the Mann-Whitney U test of digital literacy skills between male and female students

	Gender	N	Mean Rank	Sum of Ranks
Information literacy	Female	29	19.57	567.50
	Male	11	22.95	252.50
	Total	40		
Technology Operation and concepts	Female	29	19.28	559.00
	Male	11	23.73	261.00
	Total	40		
Communication & Collaboration	Female	29	20.10	583.00
	Male	11	21.55	237.00
	Total	40		
Problem solving & Critical thinking	Female	29	19.41	563.00
	Male	11	23.36	257.00
	Total	40		
Safely and Security	Female	29	20.14	584.00
	Male	11	21.45	236.00
	Total	40		

Furthermore, the Mann-Whitney U test is performed to reveal the significant differences in digital literacy skills between male and female students across five key areas: information literacy, technology operation and concepts, communication and collaboration, problem-solving and critical



thinking, and safety and security. Table 4 presents the differences in digital literacy skills between male and female students.

Table 4
The Mann-Whitney U test of digital literacy skills between male and female students

	Information literacy	Technology Operation and concepts	Communication & Collaboration	Problem solving & Critical thinking	Safely and Security
Mann-Whitney U	132.500	124.000	148.000	128.000	149.000
Wilcoxon W	567.500	559.000	583.000	563.000	584.000
Z	-.849	-1.111	-.361	-.986	-.330
Asymp. Sig. (2-tailed)	.396	.266	.718	.324	.741
Exact Sig. [2*(1-tailed Sig.)]	.419 ^b	.294 ^b	.743 ^b	.353 ^b	.765 ^b

Referring to the Table 4, for information literacy, the Mann-Whitney U value is 132.500, with a Wilcoxon W value of 567.500 and a Z-score of -0.849. The asymptotic significance (two-tailed) is 0.396, and the exact significance is 0.419. These p-values indicate that there is no significant difference in information literacy skills between male and female students. Similarly, for technology operation and concepts, the Mann-Whitney U value is 124.000, Wilcoxon W is 559.000, and Z is -1.111, with a two-tailed significance of 0.266 and an exact significance of 0.294. Again, these values suggest no significant difference between genders in this skill area. In the area of communication and collaboration, the Mann-Whitney U value is 148.000, with a Wilcoxon W value of 583.000 and a Z-score of -0.361. The asymptotic significance is 0.718, and the exact significance is 0.743, indicating no significant difference between male and female students. For problem-solving and critical thinking, the Mann-Whitney U value is 128.000, Wilcoxon W is 563.000, and Z is -0.986, with a two-tailed significance of 0.324 and an exact significance of 0.353. These results show no significant gender difference in problem-solving and critical thinking skills. Lastly, in the safety and security category, the Mann-Whitney U value is 149.000, Wilcoxon W is 584.000, and Z is -0.330, with an asymptotic significance of 0.741 and an exact significance of 0.765. These p-values indicate no significant difference in safety and security skills between male and female students. Overall, the statistical analysis reveals no significant gender-based differences in digital literacy skills among the students. These findings suggest that both male and female students possess comparable levels of digital literacy across all examined categories. Moving forward, educational strategies should continue to focus on enhancing digital literacy for all students without gender-specific modifications. Nevertheless, conducting qualitative research could provide further insights into individual challenges and help tailor support. Ensuring a balanced curriculum that addresses the needs of all students is essential for fostering an inclusive learning environment and equitable skill development.

CONCLUSIONS AND RECOMMENDATIONS

This study explored digital literacy among Bachelor of Education (B.Ed.) students at the Open University of Sri Lanka (OUSL). The analysis revealed a non-normal distribution of data, necessitating the use of non-parametric tests to assess digital literacy skills. To identify the digital literacy skills of B.Ed. students, the Kruskal-Wallis H test compared median scores across various skill areas, including information literacy, technology operation and collaboration, problem-solving and critical thinking, and safety and security. Results showed that male students generally had slightly higher mean ranks than female students. However, no significant differences in any digital literacy skill area were found based on gender ($p > 0.05$), indicating that gender does not significantly influence digital literacy skills among these students. These findings suggest that gender do not



significantly influence digital literacy levels among B.Ed. students at OUSL. Further qualitative research is needed to identify other variables that may better explain variations in digital literacy and to tailor support for specific groups.

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