



RESEARCH PAPER

Empowering Women through Digital Literacy: A Study of Islamabad Women's Colleges

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ABSTRACT

This research investigates the extent to which female students are aware of digital literacy and the role that college libraries in promoting digital literacy. This research is limited to the female students. Digital literacy skills have become increasingly important in employment, and rapid technological advancements are reshaping the job market. The study examines the landscape of digital literacy among the women of Federal Government colleges in Islamabad, highlighting the impact of career preparedness. This quantitative study assesses the digital literacy levels of 224 BS students across various subjects and finds that proficiency is low. The Statistical Package for the Social Sciences (SPSS, version 24.0) was used for data analysis, and appropriate statistical tests were employed. Results indicate that while students are aware of the importance of digital literacy for their future, they struggle to fully realize its potential. The findings highlight the need for interventions to increase digital literacy, enabling students to navigate the growing job market more efficiently. Training programs, workshops, and access to emerging digital tools are needed. By integrating digital literacy-related curricula, colleges should prepare all students for the complexity of today's workplace and embrace their general career readiness.

KEYWORDS Digital Literacy Skills, Career Preparation, Employability, Women's Colleges

Introduction

The value of digital literacy extends beyond educational institutions, shapes the job market's requirements in the digital economy, and underscores the importance of digital proficiency for higher education institutions in acquiring the latest digital literacy (Asenahabi & Ikoha, 2023)

The effect of digital literacy projects on student involvement, pointedly in the factor of virtual learning during the COVID-19 pandemic. The research comes to the conclusion that digital literacy plays a vital role in sustaining student involvement in online settings. In everyday life settings, this literacy is even more important for everyday information (Hanif & Warraich, 2023). The Research highlights that digital literacy advantages for female students' learning affect academic performance and readiness to face upcoming challenges. For the career direction, digital literacy has a major role in preparing students to gain access to career development, build necessary skills, and engage with mentors and . The differences between the definition of digital literacy and evolved technologies /innovations are how users execute tasks using technologies and behave to execute different tasks. In 2006, Martin and Grudziecki organizations identified that the concept of digital literacy encompasses multiple components, including a composite integration of capabilities, critical thinking, and attitudes (Goodfellow, 2011). The research aims to examine digital literacy and career preparedness among students at Federal Government Women's Colleges in

Islamabad. The study will also encourage students to engage with digital platforms such as Google, Zoom, LinkedIn, MS Word, Excel, and PowerPoint, which are essential for students.

Women's colleges provide career preparation for female students to employers. Women's colleges must incorporate digital literacy and career preparedness to ensure success. The study examines how digital literacy initiatives in women's colleges in Islamabad are contributing to the social, economic, and educational empowerment of female students as rapid digitization transforms education and employment globally. Women's colleges do not help students polish their digital skills due to limited resources and curricula. By addressing these problems, this study will explore undergraduate students' digital literacy and its association with career preparedness and employment.

Literature Review

Digital literacy provides a space to develop information literacy and bridge the gap. For example, an information and communication technology. Information is defined as. Accessing, managing, integrating, evaluating, and networking information to do work (Rathiswari, 2018). A 2018 study at a large Midwest university in the US found that, even with most students allowed to use laptops and smartphones, a digital gap persisted regarding constant access to authentic technology. Roughly 20% of students face various problems, such as connectivity issues and data limitations (Buzetto-Hollywood et al., 2018). As D'Amico et al. (2020) support and highlight this idea very impressively, graduate students who dedicate their time to career-oriented programs and receive professional development experience great harmony with their educational career aims. This perspective is consistent with Martin's groundwork, which identifies the competencies necessary for digital literacy, highlighting the consequences of analytical thinking, innovation, and the appropriate use of digital literacy tools (Martin, 2008).

To ensure that students are accessing significant digital skills, colleges can use digital literacy examinations and recognition systems that recognize and reward college student achievements. Digital literacy tests can facilitate the identification of students' strengths and areas for development, offer a clear framework for monitoring progress, and provide individualized support for personal needs. Assessment can take many forms, including personal assessment, the ability to apply digital skills in real-life situations (Abdulhafiz, 2024). Most of the colleges are bound in their responsibility to promote digital literacy. Colleges frequently face challenges such as limited funding, deficiencies in curriculum and evaluation, which can significantly impact students. Colleges do not have a syllabus for foundation digital literacy due to several demands (Coffey, 2024).

As organizations quickly shifted to remote work and e-services, the ability to lead technology became crucial to service continuity. Staff who were already proficient in digital skills were able to adjust more swiftly to the new normal, because a lack of digital literacy skills creates greater difficulty (Oberlander et al., 2020).

To ensure the digital literacy mix is effective, colleges must develop a system to evaluate and assess the impact of these plans of action. This can involve examining students' digital literacy skills and collecting opinions on their perceptions of and the success of the digital literacy elements in the syllabus. Facts obtained from these examination systems can foster continuous improvement, enabling colleges to revise their digital literacy courses and to strengthen the connection between these courses and students' expectations and future goals (Polizzi, 2020). In addition, one of the most effective tactics for amplifying digital literacy is to inspire it beyond the syllabus rather than requiring it as a separate track. By integrating digital literacy skills into the structure of every course, students can build these proficiencies in the background and use them to address real problems and face specific challenges (Polizzi, 2020). Moreover, we need to include information literacy in educational institutions, government plans, and community programs (Hanif & Hassan, 2025).

The use of digital literacy skills intensifies learning platforms, such as the LMS (learning management system, digital alliance devices, and e-resources, which can play a pivotal role in expanding digital literacy among students (Aggarwal, 2018). The difference between digital literacy competencies and capability is critical in digital literacy, whereas basically understanding in what way to utilize digital tools in differentiation to being an expert by influencing that digital tool to resolve problems, intensify output, or generate original new ideas is broadly debated. This is also influences how the syllabus is planned and how the results are judged. A plan of action that focuses exclusively on digital literacy skills may generate participants who are capable in using digital tools but lack the wide analytical, ethical, and innovative abilities required for significant participation. In contrast, a skill-based approach encourages a broader, more versatile, and integrated understanding of digital literacy, focusing not only on tailoring digital literacy for productive use but also on succeeding in a digital environment (Laar et al., 2017).

The research by Garcia and Hernandez found that while digital literacy conclusively affects academic achievement, its linear relationship with student involvement has not been fully investigated. This highlights a gap in the literature, as many studies tend to focus on academic outcomes without thoroughly examining how involvement itself is determined by the accumulation of digital literacy. (Garcia et al., 2022). The fast development of digital literacy has positively affected the worldwide workforce, transforming industries, job requirements, and the digital skills necessary for success (Li, 2022). Conventionally, colleges have concentrated on educating conceptual knowledge and domain-specific skill. However, the digital transformation of modern world require a move in education standard. Digital literacy, previously think about an auxiliary capability, now seen as an important element of extensive education. It provides students to use digital literacy successfully, adapt to new digital technologies and programs, and involve in lifelong learning for the duration of their careers. Because of the obvious importance of digital literacy, there is a huge by employers.

This gap is frequently introduced to as the digital literacy skills gap and it equip a renowned obstacle for both students and educational institutions (Feijao et al, 2021). Moreover, this derive of the freelance economy and the rising occurrence of freelance and convention employment have additionally emphasized the importance of digital literacy skills. Numerous freelance economies undertaking, such as web marketing, visual communication, programming and coding, are naturally digital and require a top level of digital literacy skills. This is especially major in expeditious modern world where new technology, software, programs, and digital tools are consistently progressing (Van Laar et al, 2020). At the same time a latest study highlighted that “there is a dire need to design and implement comprehensive information literacy programs that strengthen students' abilities to locate, evaluate, and ethically use information (Habib et al., 2026)

Incorporating digital literacy into professional education is pivotal for preparing students for the modern workforce, highlighting the need for fair, equitable access to digital tools and staff training (I. Harsono et al., 2024). Moreover, the digital literacy skills can even provide equal opportunities to girls in rural areas (Sadiq et al., 2025, p. 58). The rapid pace of digital literacy development means the capabilities required today may evolve in the future. As such, the future of digital literacy in college and university education will require a focus on future-oriented teaching (Milligan et al., 2020). In short, the available literature indicates the need for and importance of digital literacy.

Material and Methods

This research was quantitative and examined digital literacy and its impact on career readiness. Quantitative research emphasizes the production of analytical data that can be statistically tested to identify patterns and relationships among variables. (Creswell, 2017). The validity and reliability of the questionnaire were checked through expert opinion and pilot testing with 20 students. The researcher collected data in person by visiting each

college. The data were analyzed using Statistical Package for Social Sciences 24.0 (SPSS) software, and appropriate statistical tests, such as the T-test, means, and standard deviation, were used. Of the eleven women's colleges in Islamabad, eight offer BS programs, so the data were collected from these eight colleges. Researchers typically use 10-30% of the total population when deciding on a sample size to achieve accurate, reliable, and representative results without requiring the researcher to survey the entire population. This approach is feasible in terms of time, cost, and data collection resources (Asenahabi et al., 2023). We have maintained a sample size of 30% of the population. The inquiry gathered scenario and statistical data related to the students. A simple random sampling technique was used for this study. The total population is 746, collected from 8 women's colleges. The study embraced senior college students. This study seemed to examine 224 BS college students. These participants spanned a wide range of ages, from 18 to 35, to examine how digital literacy prepares BS college students for career readiness. All participants live in Islamabad, and we have selected only BS female college students from Federal Government Women's Colleges in Islamabad.

Table 1
Distribution of the sample by independent variables:

College	Faculty	Department	Students
Islamabad Model College for Girls (PG) F-7/2	Religion studies Natural Sciences Social Sciences	BS. Islamic studies	50
		BS. Chemistry	50
		BS. Psychology	50
		BS. Economics	50
Islamabad Model College for Girls, F-6/2 Street-25	Science Information Technology ADP(Associate Degree program)	BS. Mathematics	42
		BS. Computer Science	37
		ADP Social / Natural Sciences	50
Islamabad Model College for Girls F-10/2	Social Science	BS. Psychology	56
Islamabad Model College Commerce for Girls F-10/3	Business and Finance	BS. Commerce	27
		BS. Accounting	38
Federal Girls College of Home Economics & Management Sciences F-11/1, Islamabad	Home Economics with Specialization	BS. Textile and Fashion	14
		BS. Interior	13
		BS. Art and Design	18
		BS. Food and Nutrition	12
		BS. Human Development	11
		ADP Graphic Designing	15
Islamabad Model College for Girls (PG) Margalla F-7/4	Social Science	BS. English	49
		BS. Mathematics	32
Islamabad Model College for Girls (PG) G-10/4	Sciences Information Technology Natural Science	BS. Mathematic	30
		BS. Computer Science	23
		BS. Zoology	47
Islamabad Model College for Girls F-7/4, Street-52	Language and Literature	BS. Urdu	32
Total			746*30/100=224

Results and Discussion

Strict measures were taken to protect confidentiality. All students' data were unnamed in difference with ethical instructions, college rules, and principles. Personal identification was either removed to protect identities during the research. Access to student details was severely restricted to officials and additional personnel, minimizing the risk of unauthorized access. The respondents were informed of their right to withdraw from the research whenever without facing any unpleasant outcomes or forfeitures, highlighting their obligation to uphold their self-determination. This focus on willing contributions provides respondents with reassurance during the fact-finding process. The viewpoints collected were important, offering a comprehensive perspective on digital literacy in college, particularly within the context of women's colleges. By acquiring respondents'

diverse exposures and perspectives, the study aims to make important contributions to the ongoing conversation.

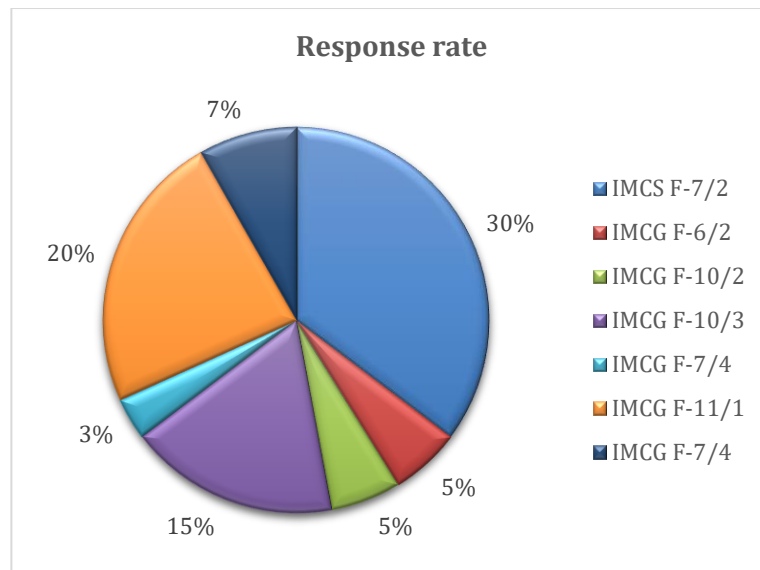


Figure:1 Response Rate

These women's colleges and their participants are shown as percentages of the students who took part in this survey. Demographic data analysis revealed that most respondents received IMCG F-7/2 from students (n=67, 29.91%).

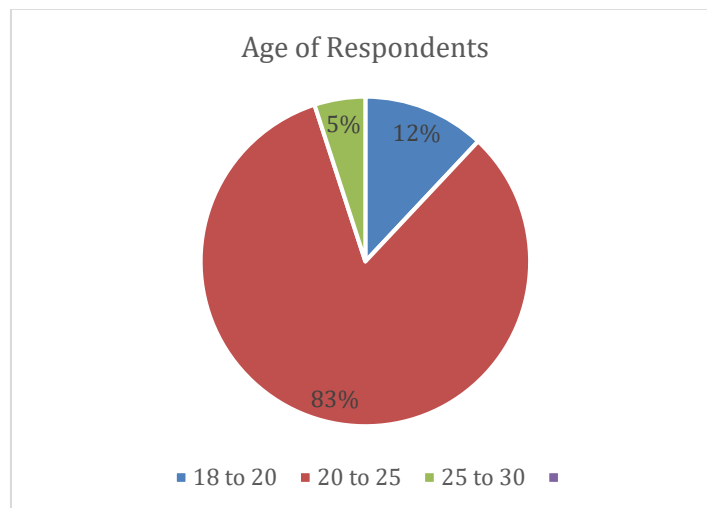


Figure 2: Age of Respondents (The ultimate ages of the students were between 20 and 30 years)

Table 2
Digital Literacy and Academics

Statements	Strongly Disagree (f)	Disagree (f)	Neutral (f)	Agree (f)	Strongly Agree (f)	Mean	SD
Do you think that digital literacy skills are important for academic success?	0	9	29	101	69	4.11	0.80
Digital literacy skills are helping me better	0	0	4	148	72	4.30	0.50

understand my curriculum this academic year.								
During the academic year, I prepare for my exams very effectively through digital literacy skills.	0	0	101	67	56	3.80	0.81	
Digital literacy enables students to become knowledge seekers, helping them achieve better grades in academic studies.	0	9	58	107	49	3.88	0.79	
Students often use search engines and artificial intelligence tools like ChatGPT and Gemini for studying.	0	0	13	85	125	4.50	0.61	
Students also examine new software and technologies to help with education.	0	0	78	95	51	3.88	0.75	
Do you think students can perform better in their studies if they improve their digital skills?	0	0	22	130	72	4.22	0.61	

The first statement of the research question is, " Do students believe that digital literacy skills are important for academic success? The majority of students (n=101, 45.0%) agreed with this statement. The remaining students (n=69, 30.8%) strongly agreed, (n=29, 13.8%) were neutral, and (9,1.7%) disagreed. No student strongly disagreed with this statement. These results indicate that most students agreed that digital literacy skills are extremely important for academic success.

The second statement of the research question is that digital literacy skills help students better understand the curriculum in their academic year. Most students (n=148, 66.0%) agreed with this statement. The remaining students (n = 72, 32.1%) strongly agreed, and 4 (1.7%) were neutral. No students strongly disagreed or disagreed with this statement. These results indicate that most students agreed that digital literacy skills are beneficial for understanding the curriculum during their academic year. The third statement of the research question is that during the academic year, students prepare for their exams very effectively through digital literacy skills. The majority of students (n = 101, 45.0%) are neutral regarding this statement. The remaining students (n = 67, 29.9%) agreed, and 56 (25%) strongly agreed. No students strongly disagreed or disagreed with this statement. These results indicate that, during the academic year, students prepared for exams using digital tools and agreed that digital literacy skills are important.

The fourth statement is that digital literacy enables them to achieve better grades in academic subjects. The majority of students (n = 107, 47.7%) agreed with this statement. The remaining students (n=58, 25.8%) were neutral, and (n=49, 21.8%) strongly agreed. No students strongly disagreed with this statement. These results indicate that students agreed with the use of digital literacy, which makes them more intelligent and enables them to achieve better performance in academic subjects. The fifth statement is that students often use search engines and artificial intelligence tools, such as ChatGPT and Gemini, for studying. The majority of students (n = 125, 55.8%) strongly agreed with this statement. The remaining students (n=85, 37.9%) agreed, and n=13 (5.8%) were neutral. No students strongly disagreed or disagreed with this statement. These results suggest that students frequently utilize search engines and artificial intelligence tools for their studies.

The sixth statement is that students also evaluate new software and technologies in their studies. The majority of students (n = 95, 41.9%) agreed with this statement. The remaining students (n = 78, 34.8%) were neutral, and 51 (22.7%) strongly agreed. No students strongly disagreed with this statement. The results of their studies suggest that students frequently use these tools in their studies. The last statement is that students can

perform better in their studies by improving their digital skills. The majority of students (n = 130, 58.0%) agreed with this statement. The remaining students (n = 72, 32.1%) strongly agreed, and 22 (9.8%) were neutral. No students strongly disagreed or disagreed with this statement. These results indicate that students agreed that digital skills help them improve their studies.

Table 3
Career Preparedness and Employment

Statements	Strongly Disagree (f)	Disagree (f)	Neutral (f)	Agree (f)	Strongly Agree (f)	Mean	SD
I know how to use technology to follow and handle my job applications on websites.	0	49	18	138	18	3.56	0.92
Due to the Lack of digital resources in colleges, students don't know how to use technologies to fulfill the need for career preparedness.	0	13	90	65	56	3.73	0.90
Student must understand the information on digital literacy skills for their future employability.	0	4	22	27	170	4.63	0.73
The college administration needs to organize physical and digital literacy classes so that students can easily find job opportunities.	0	0	11	67	146	4.60	0.58
I welcome new ideas, information tools, and new ways of work to find opportunities for my future.	0	0	0	168	56	4.25	0.43
Digital literacy skills are highly important for career preparedness.	0	0	0	34	190	4.85	0.36
Employers' First requirement for employment is digital skills. Do you think it is important to work effectively in the modern world?	0	0	0	13	210	4.94	0.23

The first statement of this research question is that students know how to use technology to follow up and handle their job applications on websites. The majority of students (n=138, 61.6%) agreed with this statement. The remaining students (n=49, 21.8%) disagreed, (n=18, 8.0%) were neutral, and (n=18, 8.0%) strongly agreed. No students strongly disagreed with this statement. These results indicate that students know how to apply for jobs through online applications, yet 49% do not. The second statement is that due to the lack of digital resources in colleges, students do not know how to use technology to meet the need for career preparation. The majority of students (n=90, 40.1%) were neutral with this statement. The remaining students (n=65, 29.0%) agreed, (n=56, 25.0%) strongly agreed, and (n=13, 5.8%) disagreed. No students strongly disagreed with this statement. These results indicate that, due to the lack of digital resources in colleges, the college administration team is not providing them to students appropriately.

The third statement is that students should understand digital literacy skills for their future employment. The majority of students (n=170, 75.8%) strongly agreed with this statement. The remaining students (n=27, 11.6%) agreed, (n=22, 11.6%) were neutral, and

a very small portion of the population (n=4, 1.7%) disagreed. No students strongly disagreed with this statement. These results indicate that students believe that digital literacy skills are extremely important for their future employment. The fourth statement is that the college administration should offer physical and digital literacy classes so students can easily find job opportunities. The majority of the students (n=146, 65.1%) strongly agreed with this statement. The remaining students (n=67, 29.9%) agreed, and n=11 (4.9%) were neutral. No student strongly disagreed or disagreed with this statement. These results indicate that students want to take physical classes on digital literacy in college.

The fifth statement is that students welcome new ideas, information tools, and new ways of working to explore their future opportunities. The majority of students (n=168, 75.0%) agreed with this statement. The remaining students (n=56, 25.0%) agreed. No students strongly disagreed, disagreed, or were neutral with this statement. These results indicate that students explore new information tools and new ways of working on a daily basis. The sixth statement is that digital literacy skills are extremely important for career preparation. The majority of students (n=190, 84.8%) strongly agreed with this statement. The remaining students (n=34, 15.1%) agreed. No students strongly disagreed, disagreed, or were neutral with this statement. These results indicate that digital literacy is extremely significant for career preparation. The seventh statement is that the first requirement for a job is digital skills. The student believes that it is necessary to work effectively in the modern world. The majority of students (n=210, 93.7%) strongly agreed with this statement. The remaining students (n=13, 5.8%) agreed. No students strongly disagreed, disagreed, or were neutral with this statement. These results indicate that the first requirement for a job is digital skills. The student knows the importance of digital skills.

Digital literacy is increasingly recognized as a significant element of future preparation, equipping college students with the digital skills needed to navigate and succeed in an advanced, technology-driven employment market. This research establishes that more than 80% of students accept the perception that digital literacy skills are necessary for achieving future goals. This point of view is endorsed by Rehmat et al. (2024), who also emphasize the significant role of digital literacy in preparing women college students for employment. This emphasizes that digital literacy is key to success in the modern job market. Digital literacy is essential for preparing for the future. In the modern world, digital literacy is essential for the workplace and has become an important skill for a secure environment. Blackstock (2021) research analysis suggests that digital literacy enables college students to fulfill the demands of present and future modern workplace duties more effectively. The research study shows that college students feel very confident in their basic digital literacy skills and recognize the significance of digital literacy for career preparation, viewing it as more than basic skills. The research suggests that digital literacy can improve the interpretation of employment and the long-term preservation of a professional setting. Generally, the examination explains that digital literacy technology is not only compatible with, but also encourages the evolution of primary skills compulsory for career progression without any setbacks. Digital literacy is directly connected to career preparedness, which is defined by a combination of elements and procedures that enable women college students to become employed and stay employed. In the employment sector, college students continue to develop digital literacy skills and technological expertise, making digital literacy an integral part of future success and significant for both the present and the future. In an era of rapid technological development, improving digital skills is pivotal to meeting career needs. As many as 65% of the students in this study recognized the importance of digital literacy skills for meeting the digital literacy requirements of their career announcement. This is confirmed by the study by Javed, Akhtar, and Nawaz (2023), which explains that there is an immediate need to include simple digital technology applications in higher educational programs to well prepare college students for employment. Overall productivity is assessed through several stages of employee interpretation, including skills, awareness, and flexibility. Essential aspects that impact performance include the ability to use digital literacy effectively, to analyze two-step

procedures effectively, and to adjust to employment expectations. Digital literacy can be seen to increase job productivity, with more than 75% of participants in this study expressing satisfaction with it. This similarity is evident in the literature, which highlights the important role of digital literacy in shaping employee acceptance and effective job performance (Nikou et al., 2022). Employee performance appraisals affect the assessment of skills, knowledge, and employability. Therefore, encouraging digital literacy is crucial for employers to improve productivity and adaptability to the rapid pace of modern digital technology.

Conclusion

Women's colleges should grasp the importance of digital literacy not just as a skill set but as a critical component of their academic mission. In this way, they can prepare college students not only to meet the requirements of the modern workforce but also to innovate, solve global challenges, and make meaningful contributions to society. Colleges should be vigilant in developing their way to digital literacy, ensuring that students are prepared for the upcoming challenges and opportunities of a digitally connected modern world. Despite the benefits, implementing digital literacy faces many obstacles that hinder its effective adoption. College Students face challenges related to the digital environment. Very low self-efficacy, high anxiety level, and high self-esteem. On the other hand, librarians may also struggle with their own digital literacy skills, including a lack of confidence and resistance to change, and need to be updated on new technologies, as recommended by Hanif et al. (2024). This research provides awareness into the field of digital literacy that can inform future research directions. Paying attention to the particulars of digital literacy skills in colleges can increase students' readiness to address and excel. This research highlights the significant role of digital literacy in enabling lifelong learning, which may be an important trait in an emerging professional digital field. By encouraging a digitally literate workforce, we can ensure that students are not only prepared to face the digital hurdles of the current employment market but also to seize the opportunities of the digital world of the future. As technology rapidly evolves, so does the ability to leverage it effectively. Thus, colleges should adopt a forward-thinking approach to curriculum design that anticipates emerging trends and prepares students to succeed in a robust, technology-driven society.

Recommendations

Multiple suggestions for forthcoming research are needed to extend the current research. The endorsements we have provided below will provide a foundation for advancing research within digital literacy.

Enhance Digital Capabilities in Students

College management should ensure that all digital resources available in colleges are accessible to students for the academic year. The student should enhance their capabilities in digital literacy skills. They use digital tools daily, such as for assignments, job searches, and information searches. The student should be involved in the digital world, which is helpful for their future.

Colleges Should Invest in Digital Tools

The college management team needs to implement its digital tools for students in their colleges.

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