

The Need for Digital Literacy for Effective E-learning Environment in Educational Institutes: A Case Study Approach.

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Abstract: The sudden learning and teaching practice changes due to the last pandemic have caused a big leap in educators' and learners' understanding and adoption of digital education. It also demonstrated the need to improve the level of digital literacy across educational institutes to a reasonable standard to enable educators and learners to autonomously adopt and then gradually adapt to the novel digital transformation in education. Digital literacy is far more than just the effective use of technology; it is enhancing educators' and learners' digital skills in education. Blended and hybrid learning is a new learning pedagogy for several educational institutes. However, beyond on-campus education, learning and teaching should continue as normal with minimal interruption, and this requires a reasonable level of digital literacy for both educators and learners. This study will examine the relationship between digital literacy competencies and an effective e-learning environment that enables educational institutes to ensure educational continuity with the least interruptions. Digital literacy has become a prerequisite for digital education and digital technology. Digital literacy, in all its forms, has become the foundation of today's education. Therefore, it is essential for educational institutes to take major steps and move quickly forward to make their educators and learners digitally literate and provide an effective e-learning environment to cope with the local and global digital educational requirements.

Keywords: Digital Literacy, E-learning, Educational Institutes, Case Study.

1 Introduction:

Digital literacy is the ability to adapt the required digital skills to survive in a digital community that is surrounded with digital technology and equipped with the necessary technology tools such as e-learning, digital business, e-government, ICT infrastructure, social media, digital platforms, IoT, mobile devices, the internet, etc. Digital literacy is a combination of literacies, such as computer and ICT literacy, that involve acquiring knowledge and skills related to computer hardware and software, internet literacy, and information literacy. Competence in digital literacy requires people to adapt some knowledge and skills, which needs a serious attitude to be committed and motivated to learn digital literacy as it is gradually becoming an initial part of the lifelong learning skills. The

ability to use digital technology to remember, understand, apply, analyse, integrate, evaluate, and create the appropriate information is considered one of the requirements of digital literacy (Dagnaw & TSIGIE, 2019). Digital literacy requires people to have some important knowledge and skills that enhance their competence in digital literacy, such as the ability to discover, capture, process, benefit from, and share digital content appropriately (Ameen & Gorman, 2009). Digital skills are very crucial to understanding and interacting with technology, which is gradually becoming a prerequisite and the backbone for digital economic development and personal digital literacy. Acquiring digital skills will greatly help individuals to use technology not only for social connections but also for education, communication, finding information, online shopping, online banking, e-government-related transitions, and many other businesses (Gelana, 2014) (Dashtestani & Hojatpanah, 2022).

2 The Essential Elements of Digital Literacy:

Individuals should invest in their own digital skills development by balancing the digital literacy elements such as Media Literacy, Communication, and Collaboration, Career and Identity Management, ICT literacy, Learning Skills, Digital Scholarship, and Information Literacy. The following figure demonstrates the major seven elements of digital literacy (Dashtestani & Hojatpanah, 2022) (Dashtestani & Hojatpanah, 2022):

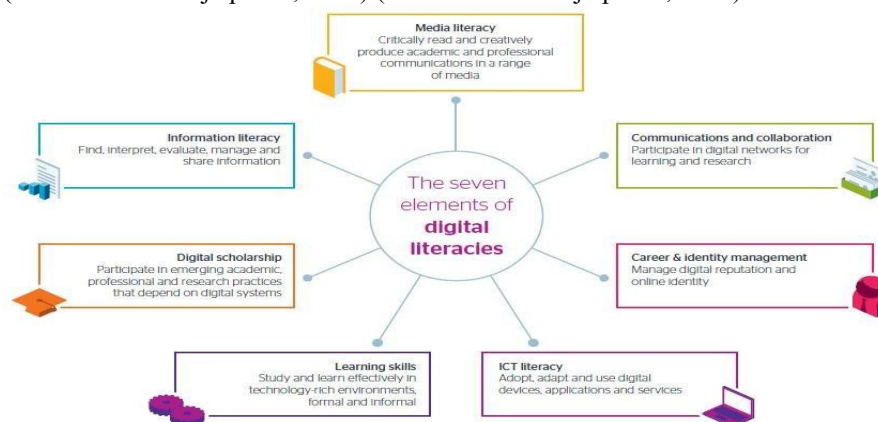


Figure 1: The seven elements of digital literacies ,Source: (JISC, 2014)

2.1 Media Literacy:

Individuals must be able to use the power of ICT to access and analyse various media to produce rich content that helps in education and supports the community. This approach will enrich the media literacy of individuals, which leads to knowledge-making and sharing. The three types of media are news media, social media, and web media. These types of media must go through a process to refine and make them ready to use. The process defines the need for media or the problem that the media might resolve; finds the right media by accessing the media; locates the media; and then retrieves the media. Media literacy will tremendously help educators and learners strengthen their skills to critically think about

how to create, communicate, collaborate, evaluate, and share useful media with others. (Tohara & Education, 2021) (Belikov & Kimmons, 2018).

2.2 Communication and Collaboration:

Communication and collaboration are key elements in digital literacy that help participants participate and communicate in several digital networks for learning and teaching, research, and other social activities. Collaboration and teamwork are much easier via technology, communication, and collaboration tools that enable individuals to create content, negotiate content, share content, participate in the discussion, and work with each other digitally. Communication and collaboration skills equip individuals with the necessary skills to effectively collaborate digitally with others in collecting, disseminating, presenting content, and working online. The following figure presents digital collaboration as an essential part of digital literacy.(Warschauer, 2009) (Delgado-Vázquez, 2021).



Figure 2: Collaboration in digital literacy, Source: (Webwise, 2022)

2.3 Career and Identity Management:

When individuals post online content, they must be aware of who can see it and what it could have on people in both negative and positive ways. To manage digital reputation and online identity, participants must secure their private and sensitive information, set extraordinarily strong privacy settings, have everyone Google themselves, clean up family social media platforms, and officially register their names online. These security practices would be extremely helpful in protecting people's digital identities and reputations so they can avoid harmful online experiences (Rahimi & Pourshahbaz, 2018) (Kimmons, 2015).

2.4 ICT Literacy:

The adoption, adaptation, and use of digital devices, applications, and services are the essential elements of ICT literacy. Individuals should be able to appropriately use digital technology via several communication tools, networks, and other applications to solve different problems related to information systems and information societies (Malanga, Jorosi, & Chigona, 2022) (Vissenberg, d'Haenens, & Livingstone, 2022).

The effective utilization of digital technology and communication tools, along with access to various networks, enables individuals to manage, integrate, apply, analyze, evaluate, and create information that contributes to the information society (Salmons, 2008) (Audrin, Audrin, & Technologies, 2022). ICT literacy enhances learners' abilities to acquire digital knowledge, skills, and competencies necessary for efficiently searching and presenting valuable information, thereby fostering critical and creative understanding within society (Ololube & Ubogu, 2009; Tinmaz, Fanea-Ivanovici, & Baber, 2022).

2.5 Digital Learning Skills:

The effective utilisation of digital technology and communication tools, along with access to various networks, enables individuals to manage, integrate, apply, analyse, evaluate, and create information that contributes to the information society (Salmons, 2008; Audrin, Audrin, & Technologies, 2022). ICT literacy enhances learners' abilities to acquire digital knowledge, skills, and competencies necessary for efficiently searching and presenting valuable information, thereby fostering critical and creative understanding within society (Ololube & Ubogu, 2009; Tinmaz, Fanea-Ivanovici, & Baber, 2022).

2.6 Digital Scholarship:

In contemporary settings, scholarly pursuits, investigative endeavours, and various other professional activities are increasingly reliant on information systems and technological advancements, necessitating a robust digital foundation. Digital scholarship encompasses the application of information and communication technology in academic and research endeavours. It also involves leveraging ICT and networks to generate and enhance value for the benefit of both scholars and society (Tohara & Education, 2021) (Layne & Ice, 2015). Engaging in academic pursuits, including communication within scholarly contexts and the use of digital media technologies, will enhance learners' abilities to navigate online journals and databases, conduct searches for digital research, gather academic information, access digital libraries, and correspond effectively via email. Engagement in digital scholarly activities is poised to significantly enhance individuals' digital literacy across multiple domains, encompassing academic, research, and various professional practices

(Ossiannilsson, 2018) (Ossiannilsson, 2017) (Baber, Fanea-Ivanovici, Lee, Tinmaz, & Sciences, 2022). The appropriate utilisation of digital technology and communication tools, along with effective access to various networks, enables individuals to manage, integrate, apply, analyse, evaluate, and create information that serves as a functional component of the information society (Salmons, 2008; Audrin, Audrin, & Technologies, 2022). The enhancement of ICT literacy significantly boosts learners' abilities to expand their digital knowledge, skills, and competencies. This improvement enables them to efficiently seek and present valuable information, which in turn fosters the development of critical and creative knowledge within society (Ololube & Ubogu, 2009; Tinmaz, Fanea-Ivanovici, & Baber, 2022).

2.7 Information Literacy:

Information sharing is one of the key elements of digital literacy, and that requires skills to search and find the right information, manage information, interpret and evaluate information, and evaluate the information for sharing the final version of information with others in society (Arslantas, Gul, & Technologies, 2022). Information literacy is the process of attaining knowledge by determining the required information, accessing the right information, evaluating the source of information, incorporating the collected information with other information in the same knowledge base, effectively using the collected information, and understanding all issues related to that information, especially the legal and ethical issues. Information literacy will enable learners to find, understand, organize, apply, analyze, evaluate, create, use, and communicate information with other participants in all its different forms (Chen, Li, Chen, & Education, 2022) (Lanning & Gerrity, 2022).

3 Analysis:

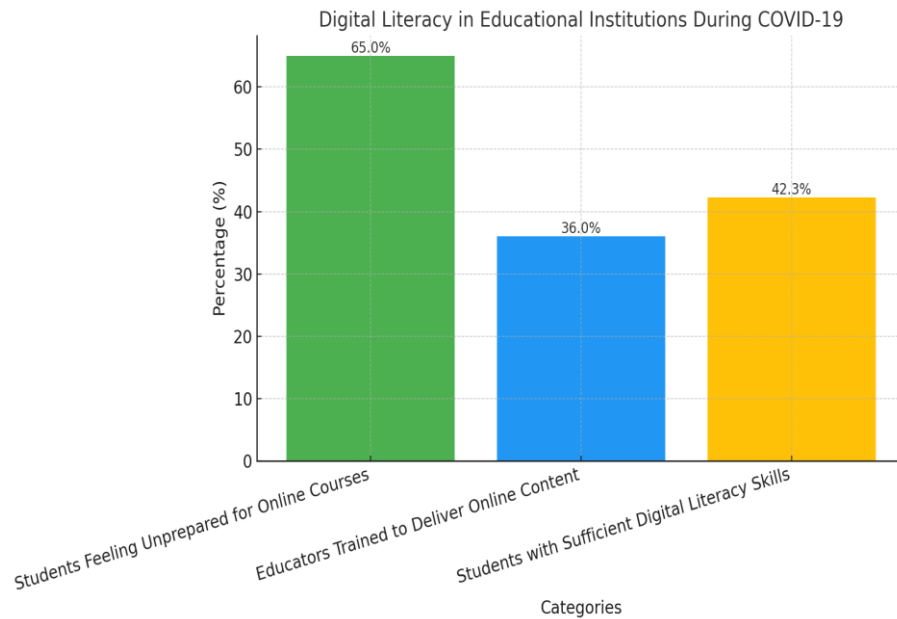
Particularly with recent worldwide moves towards online learning, the need for digital literacy is becoming more and more clear in education. This study intends to evaluate the degree of digital literacy among teachers and students in educational institutions, addressing common gaps that compromise successful e-learning environments. The basis for this research issue is the difficulty in comprehending the different degrees of digital competencies that affect student involvement and instructional delivery, so impacting their influence. The main goals are to assess present digital skills, find obstacles to efficient e-learning, and suggest ways to close these gaps by means of more training and resource allocation while investigating how digital literacy affects learning outcomes. Academically, this part adds to the larger conversation on digital literacy by offering empirical data on its crucial importance in educational environments, as noted by different researchers. Practically, the results guide legislators and teachers on the need for including thorough digital literacy initiatives that boost teachers' and students' competencies, so improving the learning results and practices.

For this study, a case study approach has been chosen in line with accepted techniques stressing context-rich data collecting and processing. Examining related research issues, particularly how digital literacy affects pedagogical strategies and student performances across various educational environments, this approach has been shown to be successful in the past. Grounding this research within the current educational environment defined by the COVID-19 epidemic helps the study identify important problems that might help practitioners change their teaching approaches to satisfy student needs.

Digital literacy has become increasingly important in the context of rapidly developing technologies, particularly in the creation of successful e-learning environments in educational institutions. Especially during the COVID-19 epidemic, teachers and students were thrown into digital learning platforms without enough preparation, which emphasizes the urgent need for improved digital competencies. Reflecting notable shortcomings in digital literacy skills, the study found that about 65% of students said they felt unprepared for online courses. Specifically, the research demonstrated that increased digital proficiency leads to increased engagement and enhances academic performance, thereby reinforcing the findings of previous studies that highlighted digital literacy as a key factor influencing educational outcomes. Moreover, the results showed that although teachers understood the need for digital skills training, only 36% had gotten training to present online materials properly, highlighting a gap that has to be filled to enhance e-learning opportunities. Comparatively, earlier studies have revealed similar deficiencies in educators' preparedness for digital learning, which emphasizes the need for thorough training courses to bridge current disparities in digital literacy.

These results become even more important since digital literacy covers not only technical ability but also critical thinking and information management techniques, which are absolutely required for negotiating the information-rich surroundings of today. The results support calls for including a disciplined digital literacy curriculum in educational initiatives by matching with frameworks created by companies like the European Commission. As studies stressing the social consequences of digital involvement have pointed out, this integration will help to enable fairer access to quality education and resource use. Furthermore, the findings reinforce foundational knowledge essential for lifelong learning and ongoing professional development, ensuring that teachers stay relevant in increasingly digital classroom environments.

Therefore, the results of this study offer a major theoretical and practical framework for future educational policies, which forces governments and educational institutions to give digital literacy top priority as a basic component of instruction and learning. Overall, the junction of digital literacy and successful e-learning environments calls for immediate attention since institutions try to equip students not only for academic success but also for active participation in society.



This bar chart illustrates key statistics related to digital literacy in educational institutions during the COVID-19 pandemic. It highlights the percentage of students who felt unprepared for online courses, the proportion of educators who received training to effectively deliver online content, and the percentage of students possessing sufficient digital literacy skills. These figures underscore the critical need for enhanced digital competencies among both students and educators to foster effective e-learning environments.

4 Discussion:

The imperative for enhanced digital literacy within educational institutes has become increasingly pronounced considering ongoing technological advancements and the shifts necessitated by events such as the COVID-19 pandemic, which mandated a rapid transition to online learning environments. The findings of this study indicate that a considerable proportion of students, 65%, reported feeling unprepared for online courses, a sentiment echoed in existing literature that suggests inadequate digital literacy directly correlates with decreased engagement and academic performance. Consequently, as educational institutions pivot towards blended learning models, it is critical to prioritize digital literacy programs that facilitate both technical and cognitive skills, addressing gaps identified in this study among educators and learners alike. Supporting these findings, prior research asserts the necessity of integrating digital competencies within the curriculum to bolster student autonomy and confidence in navigating e-learning platforms. Unlike earlier results from many educational environments, our study specifically positions the digital literacy landscape inside a particular case study approach, proving that poor digital readiness can result in significant inequalities in students' online learning experiences. The findings support claims made by advocacy organizations, including the European Commission, that

underline the critical link between digital literacy, educational equity, and lifetime learning. These results imply a fundamental change in pedagogical strategies and institutional policies that must happen to guarantee that digital literacy, including fundamental skills like critical and information literacy, stays at the forefront of educational objectives. They go beyond simple academic metrics. Teachers who embrace a more all-encompassing perspective of digital literacy will be better able to equip their students for success in an ever-changing employment environment by encouraging not only operational skills but also critical thinking and ethical digital citizenship. This study emphasizes the great need for continuous professional development for teachers so that they may apply digital literacy plans that fit different students' requirements and create a fairer classroom. Through filling in the noted gaps and enabling a methodical approach to improve digital competencies, educational institutions can change their approach to e-learning, thus arming students to flourish in a future linked by technology.

Table 1: Digital Literacy and E-learning Attitudes Pre- and Post-Test Results

Scale	Test	N	Mean	SD	df	t	p
E-Learning Total	Pre	47	64.47	3.64	46	-3.192	0.003
E-Learning Total	Post	47	67.36	6.03	46	-3.192	0.003
Tendency	Pre	47	37.51	4.95	46	-2.366	0.022
Tendency	Post	47	39.55	4.91	46	-2.366	0.022
Avoidance	Pre	47	26.96	4.69	46	-0.922	0.361
Avoidance	Post	47	27.81	5.66	46	-0.922	0.361
Digital Literacy Total	Pre	47	71.94	7.17	46	0.249	0.804
Digital Literacy Total	Post	47	71.64	7.72	46	0.249	0.804

5 Conclusion:

Learners, educators, and other people who are digitally illiterate should be ready for a future digital society by raising their digital literacy by adopting a gradual adaptation of the key digital literacy elements, such as media literacy (searching, reading, and understanding), communication and collaboration (sharing and digitally participating with others), career and identity management (managing and recognizing online identities), and ICT literacy (adoption). The future is fast approaching technology, and using ICT in all spheres of our life is rapidly turning into a reality. Whether teachers, students, or people, we all have to realize that fact and get ready for the virtual digital environment that will surround us in practically all of our daily activities and practices; this should be done by improving our digital literacy through learning and sharing technology and all its related ICT.

Gradually, the planet is shifting to the Metaverse, the virtual reality platform and future virtual universe. The Metaverse, which is based on virtual reality (VR) and augmented

reality technologies, enables a human being to journey to a completely different life, sometimes referred to as a second life or virtual life, replicating an interactive experience that is entirely distinct from the real-world. Education will be part of this new life; hence, teachers and students need to be ready with all the tools and equipment required for the clean surroundings. Institutions should use methodical frameworks that encourage digital literacy as a basic competency across courses to solve the shortcomings in digital skill sets and guarantee fair access to resources and training.

Future studies considering variances in demographic elements should investigate the longitudinal impacts of focused digital literacy initiatives on student engagement and academic success. Further research is also justified to evaluate mixed learning models that combine online and face-to-face learning environments to improve the general standard of education. Furthermore, insightful results can come from investigating obstacles to applying successful digital literacy courses in various learning environments.

Furthermore, it is advised that educational stakeholders work together, including in alliances with community organizations and technology companies, to increase resources and support for digital literacy initiatives. Future generations must be ready to flourish by means of constant research and strategic adaptation as digital literacy develops with technology. Institutions can build more inclusive and successful learning environments by making digital literacy a fundamental tenet of instruction. The results highlight the need for a paradigm change in how educational institutions approach digital skills training, enabling a culture of digital literacy that supports lifelong learning and adaptability in a world that is fast changing.

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