



INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X

Impact factor: 6.078

(Volume 6, Issue 3)

Available online at: www.ijariit.com

Promoting learning outcomes using digital literacy

Anuratha K.

anu_ksyo@yahoo.com

Mannar Thirumalai Naicker College, Madurai, Tamil Nadu

ABSTRACT

The education system could not fulfill the student's future life and guarantee a job or work. Therefore, learning and teaching practices reexamine the learning outcomes quite recently. Outcome-Based Education is a transitional and transformational move, which motivates on student ability related to education what he or she can do with his or her learning experience. Outcome-Based Education restructures the teaching and learning practices from teacher-centric into learner-centric. Digital literacy nothing but online learning, e-learning, flipped learning causes active learning to encourage the students to achieve their learning outcome. The teachers have been required mandatory training to conquer digital literacy. This paper describes how digital literacy helps in achieving the learning outcomes.

Keywords— Digital Competence, Digital Literacy, Information Communication Technology (ICT), Open educational resources (OER)

1. INTRODUCTION

Today, “teacherpreneur” is a buzz word that bridges the gap between the teacher-centric approach and learner-centric approach. Teacherpreneurs are teachers who coach other teachers on using technology and using digital solutions in and out of the classrooms to their students also. They can team up to share technology and aims for improving learning outcomes for their students. The teacher is most responsible for bringing about situations where students can learn, but the students are responsible for their own learning in the end. Teachers must use a variety of learning practices to motivate each student what they want to learn in a positive environment.

2. DIGITAL LITERACY

Digital literacy, as a concept, has been discussed and criticized by multiple authors since the 1990s, including Gilster (1997) [10], Bawden (2001; 2008) [3], Lankshear and Knobel (2008) [13], Littlejohn, Beetham and McGill (2012) [14] and Ala-Mutka (2011) [1]. A popular definition defines digital literacy as the “Awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process” (Martin & Grudziecki, 2006, p. 255) [17].

European Commission [8] has defined that using computers to create, store, retrieve, assess, present and exchange information, and to communicate and participate in collaborative networks via the Internet as the basic skills in ICT as “digital competence”. The American Library Association (ALA) defines digital literacy as “the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.” Hiller Spires [11], a professor of literacy and technology at North Carolina State University, views digital literacy as having three buckets: finding & consuming digital content, creating digital content, and communicating or sharing it. UNESCO [19] has launched the policy document related to teacher education and digital literacy as ICT competency standards on without defining the concepts. Maria et. al [16] have represented that digital literacy has found first in 1997 in the main region of the UK, US, Asia, and Europe.

Donald J. Leu [7], an education professor at the University of Connecticut and a recognized authority on literacy and technology, describes “online reading,” where the digital content is read through the internet, also requires additional skills because of the digital content may contain hyperlinks, videos, audio clips, images, interactive graphics, share buttons, or a comments section features that force the reader to stop and make decisions rather than simply reading from top to bottom.

Digital literacy simply defines knowledge/literacy about digital technology which comprises work in the environment of internet-enabled devices using communication with social media and sharing their knowledge. It includes familiarity about the computer,

search information on the web by using the internet, effective communication with social media, security about their data stored in drive and working together with different devices like mobile, laptop, iPod, etc.

The eight components (figure 1) of digital literacy include creativity, critical thinking and evaluation, cultural and social understanding, collaboration, find and select information, effective communication, e-safety, and functional skills (Cassie Hague and Sarah Payton [6]).

2.1 Digital literacy covers the following

Understanding about how computers work, to navigate a graphical user interface effectively with a mouse, to type a document, to Connect and access to the Internet, search information on the Internet effectively, store data, both on a built-in hard drive and portable storage devices, to work with interconnected digital devices, to troubleshoot basic computer issues, knowledge about trustworthy an online source of information, to manage various tasks on the computer at once, working with e-mail, to use video conferencing software, realize the impact of online safety principles, to protect devices from viruses and malware, knowledge about settings for website/application, differentiate the content is free or payable, making online payments & shopping, download movie/software, creating/editing/uploading video & photo, handling GPS and also able to explain how they are working to others. Being digital literate has numerous advantages such as fast, time saving, cheap and safer. It helps to make better decisions. It keeps you connected and employed. It makes you informative.



Fig. 1:Components of Digital Literacy

3. WHY DIGITAL LITERACY?

From the beginning, the relationship between education and socioeconomic always depends on the industrial revolution. Because, the aim of education always faces employability which depends on the expectations of the industry. Today’s students should be motivated to develop the “creativity, critical thinking, and problem-solving skills needed for the empire-building and innovation-driven careers of the future” using STEAM (Science, Technology, Engineering, Arts and Mathematics).

Bo Xing [4] has observed that the fourth industrial revolution, a new form of an interdisciplinary university is emerging that does teaching, research and service in virtual classrooms and laboratories, virtual libraries and virtual teachers due to the impact of virtual reality, artificial intelligence and augmented reality. This transformation changes in the field of education, will not degrade educational experience but augment it. The expansion of Teacher’s Digital Competence (TDC) should start using Digital Technologies (DT) to improve teaching and professional development.

21st Century teacher or educator may possess the digital literacy and willing to implement technology in the classroom. The teacher has the responsibilities for preparing students to fulfil the workspace of the future. Because, Gen Z learners don’t want long, monotonous lectures and not interested in textbooks too. They need small holistic content and wish to learn by doing. They are capable of thinking abstractly and motivated teaching with real-world examples. Let them experience their learning by encouraging to solve real-time projects heuristically. Modern classrooms that employ digital lessons as learning tools are governed by collaborative learning and student-centric learning.

3.1 Advantages of Digital Literacy

Digital literacy plays a vital role in defining a learner’s ability to succeed both in school/college and throughout their lives. This is an intrinsic aspect of 21st century education, which is the spine of our educational pedagogy. According to a UNESCO study, “the physical, intellectual, emotional and ethical integration of the individual into a complete man/woman is the fundamental aim of education”. In the 21st century, the objective of education is the mastery of information, embedded knowledge and understanding the propelled utilization of innovation in society.

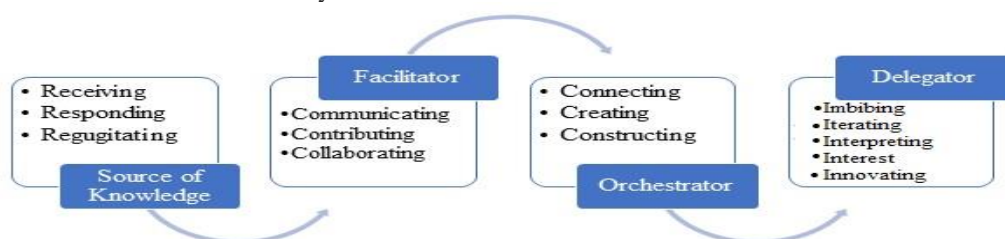


Fig. 2:Teacher’s Role

Today, the curriculum strongly supports that “what learner learn?” than “what teacher taught?”. Figure 2 clearly shows the teacher’s role from education 1.0 to education 4.0. The digital environment helps teachers in many ways of supporting learning activities and has proved by the following researches. Johnston [12] has detailed that teaching and learning activities online seem to be an efficient way of providing digital literacy to the students due to the importance of graduation attributes. Loh et. al [15] has found that digital learning offers flexibility and learning outcomes. Ferrari [9] has well defined that the creative use of ICT attains the objectives of learning, employability, and partaking in society.

- (a) **Teacher and Student engagement:** Teachers with digital literacy can make their class more interactive with their well-structured digital content. The interactive session engages the student by answering and doing individually. The smart classes encourage the students visually and help to understand the content better.
- (b) **Academic Performance:** The students do their assignments by searching and creating presentations, videos, and infographics. This creative activity boosts their high-order thinking and also deep learning. Surely, this will improve the academic performance of the students. Open Educational Resources (OER) includes open access to books, articles, reports, quizzes, lecture notes, online courses, course materials in the form of document, slides, videos, and pictures/images. It helps both the teachers and students to improve education across the world. Transformation of theoretical concept into digitalization and providing access to online saves time to explain in the classroom and monitoring the student’s academic performance or identify & assist in slow learners. Students can get more information from the digital library than from the textbook.
- (c) **Competence in their job:** Students having digital skills can make them different from others by their resume. They can demonstrate their learning ability and capable of newer technologies. They meet the employer’s satisfaction. Digital literacy helps students by getting employment in the job market.
- (d) **Makes the Institution more competitive:** If the institution ensures all teachers and students be digital literate, the standard of the institution also increase.

3.2 Limitations of Digital Literacy

Unfamiliarity in the digital environment is the basic hurdle faced by the teachers which is proved by the following researches. Siemens [18] has noted that there is only limited evidence on the impact of blended learning in higher education. Vandenhoueten et. al [20] have identified that many instructors have not promoted to the digital environment. Brasley [5] has quoted in his research that the Educational Testing Service (ETS) released a web-based interactive tool for evaluating multiliteracies in utilizing technologies such as e-mail, web browsers, and library databases. This test has revealed that educators facing challenges in promoting digital literacy on students. Alberto [2] has recommended that Universities arranged series of workshops for teachers for improving their digital literacy, fast internet connection in the staff room to search research papers for improving research skills, and also monitoring the digital productivity of teachers.

- (a) **Technologies are unreliable:** If the computer does not work well or the speed of the internet goes down, the teacher must make an alternate plan for engaging the student.
- (b) **Safety and Security:** The student must beware of the threats and cybercrimes. The teacher should make them aware of fake information.
- (c) **Too-much dependency:** Too-much dependency on digital media will lead to losing interest and increase laziness. The online teaching does not ensure the physical presence of the learner to the teacher and it is hard to monitor all the students than in a classroom makes the learner assault.

4. DIGITAL ENVIRONMENT

Digital learning environment refers to digital resources (figure 3) such as computers, software, storage, software, and systems that are used to support, manage to learn. Digital learning includes flipped learning, blended learning, e-learning, and personalized learning. Digital learning resource refers to the learning resources that support the success of learner’s described learning outcomes. These materials contain a wide variety of digitally formatted resources including graphic images or photos. audio and video in the format of pdf, doc, jpeg, wav, and MPEG.

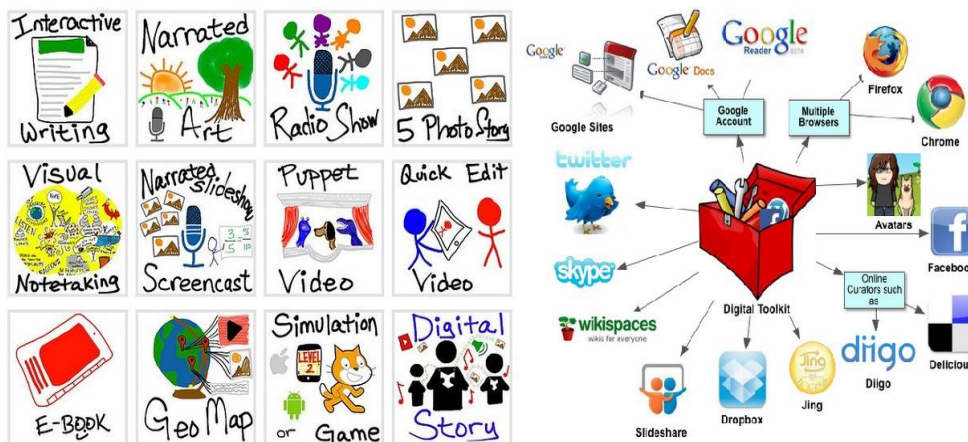


Fig. 3: Digital resources

Digital tools like zoom, blackboard, skype, google classroom, and Moodle cloud are widely used in conducting webinars, quiz, test, grade, and assignment. Sometimes, the learning content is passed between a group of students by what’s app too. This will reduce the stress of the teacher and the learner. The teacher can enhance their ability and motivates the student's participative learning. If the student misses the classes, the digital environment makes/creates the chance to access their course content anytime, anywhere, and any device. The following table 1 represent the distinguishes between traditional learning and digital learning.

Table- 1: Comparison between Traditional approach and Digital approach

Description	Traditional Learning	Digital Learning
Actor	Teacher – Information provider	Teacher - Facilitator
Source	Textbook	Various digital sources
Focus	Fact	Learning
Emphasis	Product - Transform the content which is taught.	Process - Developing deep understanding
Assessment	Quantitative	Qualitative

5. HOW DIGITAL LITERACY HELP IN IMPROVING LEARNING OUTCOMES?

Digital literacy is encouraged in two ways: enhancing the teaching and learning processes through digital solutions, and facilitating access to online educational resources. In many countries, they first focused on the development of infrastructure, without training or motivating teachers to use digital literacy while implementing educational policies for the development of digital literacy. ICTs (Information Communication Technology) turn into standard in most countries for teaching, learning, assessment, management, and communication in schools/colleges.

The UNESCO’s Annual World Report 2009, Information Society Policies (UNESCO, 2009) highlights the major challenge: the widening of the digital divide, or the lack of improvement in the area of digital literacy in developing countries. In a growing number of developing countries, digital literacy has become a national priority. General benchmarks to evaluate the results of education almost always target ICT-related issues by educational activities where ICT-supported methodology is widely employed.

5.1 Focus on the curriculum

The teacher mainly should focus on making the student attain the outcome of the course curriculum. They should motivate the students by creating digital stories or presentations or videos under the given topic. Role-play helps the students assume specific perspectives in learning. Appreciation and awards make the mind of students pleased which results in the success of their education. Identifying the picture, naming the picture or tell something about the picture restyle the classes more interactive and help to attain the higher-order thinking skill.

5.2 Create “modern” classrooms

Make the classroom modern by sitting around in groups which helps collaborative learning. Sticky (figure 4) which remembers the important terms around the class transit the student’s mind enthusiastic.



Fig. 4: Modern Classroom and Sticky Notes

5.3 Make your lessons digital

Nowadays students are known more than the teacher. The teacher must practice and introduce online teaching methods for those who are interested in real-world examples. There is numerous software like Google classroom for creating the content into digital format. This will engage the students in learning practice outside the campus. If the lessons are written on the blackboard by the teacher, some students can’t follow the teacher. Whereas the digital content makes the student more concentration as well as they can read recurrently. Digital content is a time-saving device also.

5.4 Create digital ambassadors

Assisting teachers who is inadequate knowledge in digital literacy by the digital literacy expert group. The digital ambassadors will help the teacher to drive their class preparations.

5.5 Introduce flipped learning methods

Flipped learning allows the student outside the classroom to access the lessons with any device, anywhere and anytime.

5.6 Encourage students to evaluate their own success

The teacher should allow the students for setting an objective, prepare a schedule to attain the objective, and track their own progress. Evaluating their own progress help the students to find out their mistakes.

6. EXPERIMENTAL STUDY

A survey, regarding teaching and learning practices, has been conducted between faculty (97), industrialist (3), student (41), and alumni (4) in order to analyse the awareness about digital literacy. The survey questions consist of teacher participation, modern techniques, and learning activities outside the class for achieving learning outcomes. The result of the survey conveys the digital learning encourages student learning activities at the same time lack of knowledge in digital literacy among the teachers has been found from the feedback.

Table 2 depicts the overall responses of the survey. Frequently conducting appropriate faculty development training for the teachers will overcome this issue. Teacherpreneur or some experts also will assist the teacher in preparing digital content and to build their competence in the field of handling ICT tools.

Table 2: Overall Responses

Question ID	1	2	3	4	5	Total
Q1 – Motivates student in collaborative learning	4	8	11	72	54	149
Q2 – Classroom management	5	9	18	67	50	149
Q3 – Knowledge of the teacher	2	5	21	58	63	149
Q4 – Encourages real-time activities such as group discussion, field-work, seminar etc.	2	10	17	61	59	149
Q5 – Teacher’s involvement in learning outcome	5	7	19	66	52	149
Q6 – Outside classroom activities	4	14	27	56	48	149
1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree						

7. CONCLUSIONS

This paper has represented the impact of digital technology platforms as a means of providing higher education and the hope that through greater digital literacy training, high-quality digital literacy instruction programs will be made available to the student. Faculty members need training in handling digital tools for preparing innovative educational materials and it is mandatory for achieving digital competence. By improving the institution’s reputation and providing digitally enhanced information that will attract and improve student enrolment.

8. REFERENCES

- [1] Ala-Mutka, K. (2011). Mapping digital competence: Towards a conceptual understanding. JRC Technical Notes, JRC67075. Seville: Institute for Prospective Technological Studies. Retrieved from http://ftp.jrc.es/EURdoc/JRC67075_TN.pdf.
- [2] Alberto D. Yazon, Karen Ang-Manaig, Chester Alexis C. Buama, John Frederick B. Tesoro, Digital Literacy, Digital Competence and Research Productivity of Educators, Universal Journal of Educational Research 7(8): 1734-1743, 2019 <http://www.hrpub.org> DOI: 10.13189/ujer.2019.070812.
- [3] Bowden, D. (2008). Origins and concepts of digital literacy. In C. Lankshear & M. Knobel (Eds.), Digital literacies: Concepts, policies and practices (pp. 17-32). New York: Peter Lang. Retrieved from http://pages.ucsd.edu/~bgoldfarb/comt109w10/reading/Lankshear-Knobel_et_al-DigitalLiteracies.pdf.
- [4] Bo Xing and Tshilidzi Marwala, “Implications of the Fourth Industrial Age on Higher Education”, Available online at <https://arxiv.org/ftp/arxiv/papers/1703/1703.09643.pdf>.
- [5] Brasley, S. S. (2006). Building and using a tool to access info and tech literacy. Computers in Libraries, 26(5), 6-48.
- [6] Cassie Hague and Sarah Payton, Digital Literacy across the curriculum, Future Lab, Innovation in Education, 2010, available at <https://www.nfer.ac.uk/publications/futl06/futl06.pdf>.
- [7] Donald J. Leu Elena Forzani Chris Rhoads Cheryl Maykel Clint Kennedy Nicole Timbrell, The New Literacies of Online Research and Comprehension: Rethinking the Reading Achievement Gap, International Reading Association, Reading Research Quarterly, 0(0) pp. 1–23 | doi: 10.1002/rrq.85, 2014. Available at <https://www.edweek.org/media/leu%20online%20reading%20study.pdf>.
- [8] European Commission. (n.d.) Council Recommendation on Key Competences for Lifelong Learning. Retrieved from https://ec.europa.eu/education/education-in-the-eu/council-recommendation-on-key-competences-for-lifelong-learning_en
- [9] Ferrari, A. (2012). Digital competence in practice: An analysis of frameworks. Luxembourg: Publications Office of the European Union. <http://doi.org/10.2791/82116>.
- [10] Gilster, P. (1997). Digital literacy. New York: Wiley Computer Pub.
- [11] Hiller A Spires, Digital literacies and learning: Designing a path forward - Friday Institute White Paper Series, 2012. Available at <https://www.fi.ncsu.edu/wp-content/uploads/2013/05/digital-literacies-and-learning.pdf>.
- [12] Johnston, N. (2010). Is an online learning module an effective way to develop information literacy skills? Australian Academic & Research Libraries, 41(3), 207-218. <https://doi.org/10.1080/00048623.2010.10721464>.
- [13] Lankshear, C., & Knobel, M. (2008). Digital literacies: Concepts, policies and practices. New York: Peter Lang.
- [14] Littlejohn, A., Beetham, H., & McGill, L. (2012). Learning at the digital frontier: A review of digital literacies in theory and practice. Journal of Computer Assisted Learning, 28, 547–556. <https://doi.org/10.1111/j.1365-2729.2011.00474.x>.
- [15] Loh, C., Wong, D. H., Quasi, A., & Kingshott, R. P. (2016). Re-examining students’ perception of e-learning: An Australian perspective. International Journal of Educational Management, 30(1), 129-139. <https://doi.org/10.1108/IJEM-08-2014-0114>.
- [16] Maria Spante, Sylvana Sofkova Hashemi, Mona Lundin and Anne Algers, Digital competence and digital literacy in higher education research: Systematic review of concept use, Cogent Education, Volume 5, Issue 1, 2018, Available online at <https://www.tandfonline.com/doi/full/10.1080/2331186X.2018.1519143>.
- [17] Martin, A., & Grudziecki, J. (2006). DigEuLit: Concepts and tools for digital literacy development. Innovation in Teaching and Learning in Information and Computer Sciences, 5(4), 249–267. <https://doi.org/10.11120/ital.2006.05040249>.

- [18] Siemens, G., Gašević, D., & Dawson, S. (2015). Preparing for the digital university: A review of the history and current state of distance, blended, and online learning. Arlington: Link Research Lab. Retrieved from <http://linkresearchlab.org/PreparingDigitalUniversity.pdf>.
- [19] UNESCO (2008). ICT competency standards for teachers. Policy Framework (156210). Paris, France: United Nations Educational, Scientific and Cultural Organization. Ungerer, L. (2016).
- [20] Vandenhouten, C. L., Gallagher-Lepak, S., Reilly, J., & Ralston-Berg, P. (2014). Collaboration in e-learning: A study using the flexible e-learning framework. *Online Learning*, 18(3), 1-14. <https://doi.org/10.24059/olj.v18i3.404>.