

DIGITAL LITERACY: TOOL FOR EDUCATION REFORM IN THE 21ST CENTURY**By****MUOKA, FIDELIA CHINWENDU****Abstract**

The study aims at exploring the concepts of digital literacy, examining the basic areas of education reform and digital literacy tools available for students and studying ways of actualizing modern education through digital literacy. The study reviews related literature in order to find out the state of the art. It is worrisome that digital technologies are not fully utilized in modern educational settings. The implication is that in order to meet up with the modern education philosophy, the digital literacy must be highly recommended. This cannot be achieved without the plan to develop teachers and students' interest towards learning digital literacy skills. This calls for government and other stakeholders in education to work towards installing various digital devices inside schools for learning digital literacy skills. The study concludes with recommendations on how these giant stride technologies can meet the needs of learners and teachers.

Keywords: Digital literacy, Education, Education Reform, Education in 21st Century

Introduction

Digital literacy has brought about a change in all aspect of human endeavor. This change has equally affected education in general. Education is the service provided in all countries of the world with many objectives in mind. These objectives include skills that are required for a more rapid growth of the economy and the provision of basic knowledge to the citizen. Education seeks to develop the inner capacities of man and has become the most important factor for economic development in the 21st century. The 21st century is the current century of the Gregorian calendar which begins on January 1,2001 and will last to December1,2100. It is an era marked by rapid adoption of new technologies to meet up with education.

Modern education is essentially the way education systems help students acquire skills that will help them advance both academically and professionally. Modern education relies on computers and the internet. In order for them to reach that level, it is necessary to develop 21st-century skills for today's students. This enables students to develop skills they can apply and advance while still at school. The goal is for the students to successfully prepare for both their academic and professional careers. This is achieved through a variety of approaches, such as using digital technology. A modern learning philosophy emphasizes effectiveness and efficiency and teaches students how to learn and integrate disciplines, and to solve problems collaboratively, rather than to sit at desks facing forward, moving from subject to subject in isolation. The state of education in Nigeria shows that those who are not digitally literate will be at a distinct disadvantage as the world is being significantly impacted on by digital technologies. It can be deduced that being digitally literate is not only being proficient in the use of computers but also having the skills needed for reading and writing with them (Kope, 2006). Digital literacy can therefore be seen as more than mastering a specific skill; it is achieved when certain digital competences are thoughtfully deployed in authentic life situations in solving a problem or completing a task (Martin, 2006).

Literacy in the 21st Century

Advancements in technology are forming new possibilities, practices, demands and hence new literacy. New literacy has developed with distinctive levels as well as usages changing across different situations, depending on developing needs (Belshaw, 2011; Churchill, 2009). New literacies of this era are collection of some important abilities, which are required to create

and communicate meanings, develop one-self, and participate in a speedy changing society. As, the world is converting into digital and everything is shifting online such as various kinds of online shopping stores, teaching and learning platforms, online banking system, online selling and purchasing platforms and much more. This innovative environment demands some particular skills to be successful in every field of life as well as in the field of education. Similarly, another famous researcher known as Martin (2008) described the literacies of 21st era after modifying his earlier concept of literacies offered in 2006. These literacy such as computer literacy or IT/ICT, technological literacy, information literacy, media literacy, visual literacy, and communication literacy are considered the basis of digital literacy.

Digital Literacy

In today's world it is a requirement to be digitally literate in order to be able to function in a capacity that enables one to be more successful whether it is at home, school, at our jobs or even looking for a job. Over the last few decades our environment has evolved into a digital environment. Being or becoming digitally literate is essential in being successful in this digital environment. Digital literacy, which is one of the challenges of integration of technology in academic courses (Blau, Shamir-Inbal & Avdiel, 2020), has been defined in the current literature as the competencies and skills required for navigating a fragmented and complex information ecosystem .

A 'Digital Literacy Framework' was designed by Eshet-Alkalai (2012), comprising six categories: (a) photo-visual thinking (understanding and using visual information); (b) real-time thinking (simultaneously processing a variety of stimuli); (c) information thinking (evaluating

and combining information from multiple digital sources); (d) branching thinking (navigating in non-linear hyper-media environments); (e) reproduction thinking (creating outcomes using technological tools by designing new content or remixing existing digital content); (f) social-emotional thinking (understanding and applying cyberspace rules)

Digital literacy refers to an individual's ability to find, evaluate, and communicate information through typing and other media on various digital platforms. It is evaluated by an individual's grammar, composition, typing skills and ability to produce text, images, audio and designs using technology. The American Library Association (ALA 2011) 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." While digital literacy initially focused on digital skills and stand-alone computers, the advent of the internet and use of social media, has resulted in the shift in some of its focus to mobile devices.

Digital literacy does not replace traditional forms of literacy, but instead builds upon and expands the skills that form the foundation of traditional forms of literacy. Digital literacy is built on the expanding role of social science research in the field of literacy as well as on concepts of visual literacy, computer literacy, and information literacy. Overall, digital literacy shares many defining principles with other fields that use modifiers in front of literacy to define ways of being and domain-specific knowledge or competence. The term has grown in popularity in education and higher education settings and is used in both international and national standards. Obviously, digital literacy is considered as the basic ability of technological capabilities and knowledge to the engagement in complex, non-linear, cognitive and social activities that enable a person to

live, learn, and work in a digital era (JISC, 2009) Therefore, students living in this environment would have broad abilities in using these technologies (Oblinger and Oblinger, 2005).

Digital literacy comes under five types of, namely:

1. Photo-visual literacy: the ability to read and deduce information from visuals.
2. Reproduction literacy: the ability to use digital technology to create a new piece of work or combine existing pieces of work to make it your own.
3. Branching literacy: the ability to successfully navigate in the non-linear medium of digital space.
4. Information literacy: the ability to search, locate, assess and critically evaluate information found on the web and on-shelf in libraries.
5. Socio-emotional literacy: the social and emotional aspects of being present online, whether it may be through socializing, and collaborating, or simply consuming content.

Additionally, Oblinger and Oblinger (2005) termed that the students of present generation as “digitally literate” having remained connected regularly to others, instant in nature, pragmatic learners and socially centered creatures. Frand (2000) claimed that the students who desire to receive information rapidly; and trust greatly in communication technology to access information and to carry out professional and social collaborations, are known as digital natives. However, students who are using related and selected technologies like having knowledge and skill to send mail, ability to work with word processing tools and social networking websites over the Internet cannot claim to have digital literacy skills (Littlejohn, Margaryan, & Vojt, 2011). Eshet-Alkalai

(2004) pointed out that many authors described “Digital literacy” but no one agreed on a particular definition of the term which looks to be indefinable. The definition of digital literacy is much akin and related to the ideas of information literacy, IT or computer literacy, as well as several collections of new literacies. People pronounce the definition of digital literacy vaguely and this fails them to communicate adequately and understand correctly (Oblinger and Oblinger, 2005).

This is the era of innovation in which integration of various digital technologies in every field is increasing day by day. Thus, the society of this era needs innovative skills such as capabilities, abilities and studying tempers that have been recognized as being necessary for success in 21st century society as workplaces by teachers, business leaders, academics and governmental organizations. International agencies are also concentrating on the abilities required for learners to be expert in preparation for success in a speedy changing digital society. Some of these abilities are connected with deep learning, which is based on mastering skills such as analytic reasoning, complex problem solving and teamwork (Chris, 2009 and Stedman, 2015). However, particular difficult skills are mastery of specific skill sets and focusing on digital literacy are in progressively high demands (Chris, 2009 & Stedman, 2015). Individual abilities which include interaction, collaboration, and managing others are progressively significant.

Particular skills that empower people to be flexible and adaptable in different roles as well as in different fields and have ability to be involved in handling information and managing individuals more than manipulating equipment in any organization are in high demand (OCED, 2005). These skills are known, for instance, applied skills or soft skills, including personal,

interpersonal, or learning-based skills, such as life skills (problem-solving attitudes), people skills, and social skills. These skills have been assembled into three major areas (Trilling and Fadel, 2009).

- 1) Learning and innovation skills such as critical thinking, problem solving, communication, collaboration, creativity and innovation.
- 2) Digital literacy skills such as information literacy, media literacy, information and communication technology (ICT) literacy.
- 3) Career and life skills such as flexibility, adaptability, initiative, self-direction, social and cross-cultural interaction, productivity and accountability.

Digital literacy demands particular skill sets that are naturally related. According to Warschauer and Matuchniak (2010) digital literacy has three skill sets, or 21st century skills that people need to master in order to be literate digitally. These skills are: information, media and technology; learning and innovation skills; and life and career skills. In pursuance of information, media and technology skills; students need to achieve competency in information literacy, media literacy and information communication technologies. They further highlight that in learning and innovation skills, individual must also be able to practice their creativity and innovation, critical thinking and problem solving, and communication and collaboration skill. In order to be competent in Life and Career Skills, individual must be able to practice flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, leadership and responsibility. Similarly, Aviram & Eshet-Alkalai (2006) focus on

five kinds of literacies under the umbrella of digital literacy that people need to be expert in order to be digitally literate.

The first kind focuses the ability of reading and deducing information from visuals (Photo-visual literacy), second kind deals with the ability of using digital technology for creating some novel pieces of work or combining existing pieces of work to create it your own (Reproduction literacy), third kind deals with the ability of navigation in the non-linear medium of digital space (Branching literacy), fourth kind focuses on the ability of exploring, locating, assessing as well as critically evaluating information available on the web as well as in libraries (Information literacy), the last kind deals with the ability to socializing and collaboration or consuming content being present online for social and emotional aspects (Socio emotional literacy).

Applications of digital literacy in Education

Due to the fact that the world is fast transforming into the digital world, every sector in education is trying to meet up with the high demand. This often include, computers in the classroom, the use of educational software to teach curricula, and course materials being made available to students online. Students are often taught literacy skills such as how to verify credible sources online, cite websites, and prevent plagiarism. Google and Wikipedia are frequently used by students and are just two common tools that facilitate modern education. Digital technology has impacted the way lessons are taught in the classroom. Educators are altering traditional forms of teaching to include course materials on concepts related to digital literacy.

Educators have also turned to social media platforms to communicate and share ideas with one another. Social media and social networks have become a crucial part of the information landscape. Many students are using social media to share their areas of interest, which helps boost their level of engagement with educators. New standards have been put into place as digital technology has augmented classrooms, with many classrooms being designed to use smartboard and audience response system in replacement of traditional chalkboards or whiteboards. Additionally, these new models of learning in the classroom have aided in promoting models on the emphasis of finding new digital didactics to implement as they find more global connectivity and have enabled students to become globally-minded citizens.

The COVID-19 virus that started in late 2019 had pushed education into a more digital and online experience where teachers had to adopt to new levels of digital competencies in software to continue the education system as academic institutions discontinued all in-person activity and different online meeting platforms are being used for better communications (e.g: Skype, Zoom, Cisco Webex, Google Hangouts, Microsoft Teams, BlueJeans and Slack). Two major formats of online learnings: Asynchronous allow students to have more collaborative space and build up involvement while Synchronous learnings mostly take on live video format for better. Digital literacy is considered as a vital technological gadget for educators, and learners of 21st century. It has been confirmed through the study of Head and Eisenberg 44(2009) that many institutions are struggling continuously to update their curriculum to keep up with accelerating technological development. These institutions included computers in the classroom, used educational software to teach curriculum, and provided course material to learners online.

Scholars are often taught literacy skills regarding verifying credible sources presented online, citing websites, and avoiding plagiarism in a technological world. Most of the students used Google and Wikipedia for daily life research which facilitates them about contemporary education.

Digital technologies have also impacted the way material is taught in the classroom. Educators of this era are trying to enhance customary forms of learning with digital literacy through different platforms. Many websites are supporting these efforts such as Google Docs, Prezi, and Easybib. These services have supported the scholars through teaching collaboration, permitting learners to use pre-made, creative presentation templates, and assisting in generating citations in any given format.

Moreover, teachers have also turned to social media sites such as Facebook, Twitter, Edmodo, Instagram, and Schoology to communicate and share ideas with each other. Digital technologies have changed standards related to better classrooms and many institutions have designed their classroom with installation of smart boards in addition to audience response system in replacement of traditional chalkboards or whiteboards (Greenhow, Sonnevend, & Agur, 2016). Hinrichsen and Coombs (2014) state that digital literacy empowers students, teachers, and pedagogy in 4specific models of engaging with digital mode. These four models are text participating, code breaking, text analyzing, and text using. These approaches empower all learners to completely engage with the media. It also enhances individual to be able to relate the digital text to their personal experiences. Furthermore, proper implementation of digital literacy in education gives extensive advantages in designing digital curriculum. Digital literacy

helps social network services and Web 2.0 platform to stay in contact with others, pass timely information, and even buy and sell products and services. Digital literacy can also empower people to escape from different online frauds for example photo manipulation, e-mail frauds and phishing often can fool the digitally illiterate people (Longardner, 2015). However, people who are practicing technology and internet to commit these fraudulent acts possess the digital literacy skills to fool victims by understanding the technical trends and consistencies. So, digital literacy skill is important for people to consider one step forward when utilizing the digital world. After the advent of social media, individuals who are digitally literate have now a major voice online (Diptiman & Rudranil, 2009).

Basically, there are three areas of education reform

1. Resource-based leaning: This involves communication of curriculum between students and educators through use of resources (instructionally designed and otherwise) that harness different media as necessary
2. Inquiry- based approach This is an approach that helps students build their knowledge and understanding through research and exploration activities based on existing knowledge. The inquiry method requires high-order thinking skills and critical thinking to make conclusions.
3. Open-classroom concept: This allows students to learn in ways suited to their individual differences and that the most effective teaching and learning strategies allow teachers to work collaboratively with each other and team teach.

The infusion of computers and other digital technologies in education is on a steady rise.

Students can collaborate on group project using digital tools such as wikis and google docs. The

walls of the classroom is no longer a barrier as technology enables new ways of learning, communicating and working collaboratively. Digital literacy instructor engages student's cognitive abilities, asking them to apply critical thinking skills to their actions, behaviour, and social engagement in digital platform. Each day new applications and devices are researched, developed and put to use in improving outcome quality. In many interesting ways, technology has been able to resolve complexities and challenges of public service in education. Innovation has ensured effectiveness in programme management, classroom learning experience and professional development in the education system. Managing education reforms involves many complex tasks and daily challenges. To succeed in delivering essential educational goals in our digital information age, we have to employ the latest technological tools for training, online learning and access to information, resources and services. These tools help us do more by simplifying complex tasks. The application of technological developments has an overwhelming impact on our daily activities. This transformation has redefined literacy, and our education system has to align with these changing needs. More parents are responding to significant learning gains offered in public schools using digital technology. The pliability of blended learning has facilitated in creating a less stressful learning environment and offers a huge potential for learning gain. Inclusivity lies at the core of education reforms.

Challenges of utilizing digital literacy in education

- High costs of infrastructures such as the Internet and power is one of the challenges faced in utilizing digital literacy in education.
- Low rate of capacity building exercises and training on digital literacy across board.
- High rate of digital divide due to the existence of unreached communities who are not aware of the concept of digital literacy.
- The concept of digital literacy has been couched to be something so complex that it appears intimidating to a lay-man and as such fails to be understandable in simple terms.
- Non availability of network in some communities. The general attitude of people towards change and what digital literacy offers, is a hindrance in utilizing digital literacy.

Conclusion The world is rapidly transforming into the digital world and digital technologies have been fixed permanently in most popular cultures. Every organization is striving to stand in the online race. These technologies empower everyone to perform the best in their field, especially in the field of education.

Based on the findings of the study:

Government and other stakeholders in education should plan to develop maximum students and teachers' interest towards learning digital literacy skills. Government and other stakeholders in education should provide sufficient facilities for learning digital literacy, installation of various digital devices inside schools for students practices, compulsory course about digital literacy for students before higher studies, various trainings regarding digital technologies for teachers and

students, provision of sufficient uninterrupted internet facility with high speed and low cost internet packages to improve the digital literacy of the teachers and students.

References

- ALA (America Library Association) Digital Literacy Taskforce (2011). Office of information technology: Retrieved from [http://connect.ala.org/files/94226/what%20is%20digilit %](http://connect.ala.org/files/94226/what%20is%20digilit%20)
- Aviram, A., & Eshet-Alkalai, Y. (2006). Towards a theory of digital literacy: Three scenarios for the next steps. *European Journal of Open, Distance and E-Learning*. R
- Blau, I., Shamir-Inbal, T., & Avdiel, O. (2020). How does the pedagogical design of a technology enhanced collaborative academic course promote digital literacies, self-regulation, and perceived learning of students? *The Internet and Higher Education*, 45,100722. <https://doi.org/10.1016/j.iheduc.2019.100722>
- Chris, D.(2009). Comparing Frameworks for 21st Century Skills,Harvard Graduate School of Education. Retrieved from [http://stechnology.pbworks.com/f/Dede_\(2010\)_Comparing%20](http://stechnology.pbworks.com/f/Dede_(2010)_Comparing%20)
- Churchill, D. (2009). New literacy in the Web 2.0 world. Paper presented at the University of Hong Kong, Hong Kong. <http://www.slideshare.net/zvezdan/newliteracy-in-the-web-20-world>
- Diptiman, D., & Rudranil D.(2009).“Social networks using web 2.0”.IBM. Retrieved from <https://www.ibm.com/developerworks/library/ws-socialcollab/> 20%282%29.pdf
- Eshet, Y. (2004). Digital literacy: A conceptual framework for survival skills in the digital era. *Journal of Educational Multimedia and Hypermedia*, 13(1), 93–106, <https://www.learntechlib.org/primary/p/4793/>
- Eshet-Alkalai, Y. (2012). Thinking in the digital era: A revised model for digital literacy. *Issues in Informing Science and Information Technology*, 9(2), 267–276. <https://doi.org/10.28945/1621> Article Google Scholar
- Frاند, J. (2000). The information-age mindset. *International Journal of higher education*, vol. 35, no 2, pp. 14-24.

Greenhow, Christine; Sonnevend, Julia; Agur, Colin (6 May 2016). Education and Social Media: Toward a Digital Future. MIT Press. ISBN 9780262334860

Head, A., & Eisenberg, M. (2009). How college students seek information in the digital age. Retrieved from http://ctl.yale.edu/sites/default/files/basic-page-supplementary-materials-files/how_students_seek_information_in_the_digital_age.pdf

Hinrichsen, J. & Coombs, A. (2014). "The five resources of critical digital literacy: a framework for curriculum integration". *Research in Learning Technology* 21(0). doi:10.3402/rlt.v21.21334. ISSN 2156-7077

JISC (2009a) Learning Literacies in a Digital Age

<http://www.jisc.ac.uk/publications/briefingpapers/2009/learningliteraciesbp.aspx>, accessed 29 May 2018.

Kope M. (2006). Understanding e-Literacy. Published in the Book *Digital Literacies for Learning*, Edited by Martin A and Madigan D, Facet Publishing.

Littlejohn, A., Margaryan, A., & Vojt, G. (2011). Exploring students' use of ICT and expectations of learning methods [Online]. *Electronic Journal of E-Learning (IJEL)*, 8(1). <http://www.ejel.org/Volume-8/v8-i1/v8-i1-art-2.htm>.

Longardner, Tara (2015). "US News". The Growing Need for Technical and Digital Literacy Technology Standards Watch, February, 2007

Martin A. (2006). Literacies for the Digital Age. Published in the Book *Digital Literacies for Learning*, Edited by Martin A and Madigan D, Facet Publishing.

Oblinger, D. G., and Oblinger, J. (2005). *Educating the Net Generation*. EDUCAUSE Online book. Retrieved from: <http://www.educause.edu/ir/library/pdf/pub7101.pdf>

OCED (2005). The Definition and Selection Key Competencies. Retrieved from <http://www.oecd.org/pisa/35070367.pdf>

Prensky, M. (2001a). Digital Natives, Digital Immigrants. *On the Horizon*, 9(5), 1-6.

Trilling, B. & Fadel, C. (2009) *21st Century Skills: Learning for Life in Our Times*, Jossey-Bass (publisher), ISBN 978-0-470-55362-6.

Warschauer, Mark; Matuchniak, Tina (March 2010). "New Technology and Digital Worlds: Analyzing Evidence of Equity in Access, Use, and Outcomes". *Review of Research in Education*. 34(1): 179–225. [doi:10.3102/0091732X09349791](https://doi.org/10.3102/0091732X09349791).
[S2CID 145400905](https://scid.org/S2CID/145400905)