Assessing the Impact of Digital Literacy on the Learning Outcome among Second Language Learners of English

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Abstract
The invention of digital learning has ignited several debates questioning the place of traditional learning methods in the learning system. The fusion of digital tools in language learning has transformed the way second language learners of English acquire and develop language skills. However, the impact of digital literacy on learning outcomes among these users remains a gray area. This study examined the nexus between digital literacy and learning outcomes among second language learners of English as regards the impact of digital literacy on the learning outcomes of tertiary students in the southeastern part of Nigeria by prioritising its relevance and the seeming challenges that pervade this cutting-edge technological advancement. Through a validated and structured 10-item questionnaire, study samples were collected. Similarly, key person interview was conducted with some tertiary institution teachers to supplement the results from the questionnaire. Results indicate that learners with higher levels of digital literacy demonstrate improved language proficiency, increased autonomy, and enhanced collaboration skills but this is not the situation among most tertiary students interviewed. Furthermore, the study reveals that digital literacy could have huge impact on learners' learning outcomes. Also, the results demonstrate that instructors' poor digital literacy levels significantly could hamper the integration of their digital dexterity effortlessly and effectively into their teaching methods. The findings further highlight the need for targeted digital literacy training programs for both learners and instructors. Above all, this study shows that digital literacy is essential in optimizing learning outcomes among second language learners of English.
Keywords: Digital Literacy, Second Language Learning, Learning Outcomes, Language Proficiency.

Introduction

The concept of digital literacy encompasses the acquisition of basic functional digital skills for accessing digital devices and applications. The notion of digital literacy (DL) is a prevailing research area and as encapsulated by Paul George Zurkowski (1974) is the ability to recognise, locate, and examine information. Digital learning focuses on the technical, procedural, memory, and socio-emotional skills needed to live, learn, and work in a digital society (Eshet-Alkalai, 2012; European Commission, 2018). Digital literacy is a survival skill required to compete and survive in this digital age. Jones-Kavalier and Flannigan (2008) believe that digital literacy represents a person's ability to perform tasks effectively in a digital environment. Also, DL is considered as being inextricably linked to the social and educational demands of the society in which we live (Larraz, 2013; Brata et al., 2022). It is a comprehensive process with multiple literacies (Gisbert and Esteve, 2011; Lázaro, 2015; Valverde et al., 2022) whose primary focus is mastery of particular skills linked to the assessment of literacy needs, access to information in digital environments, the use of ICT tools to manage information, interpretation, representation and evaluation of information, and transformation. Conversely, while some users have demonstrated mastery of technology others still grapple with the rudiments of this skill. In the light of the above, the researcher has set out to examine the impact of digital literacy on the learning outcomes of its users, the relevance and the possible constraints of DL particularly among second language learners of English in some federal universities in the southeastern Nigeria.

The general objective of the study is to examine the impact of digital literacy on the learning outcomes of students in the southeastern part of Nigeria. The study specifically seeks to ;

a. investigate the relevance of digital literacy on the academic performance of students;
b. ascertain the impact of DL in their learning styles and
c. identify the digital literacy levels of students under study

Every research work has a theoretical standpoint which invariably supports the overall study structure, and so, this study is anchored on the Connectivism theory as developed by George Siemens and Stephen Downes in 2005. The theory holds that learning primarily occurs through the capacity to navigate and connect to information networks. It highlights the role of technology and social connections in the learning process, where people function as "nodes" i.e. individuals, organisations or resources that are connected within a larger network, accessing and sharing knowledge from diverse sources, including social media and online platforms. Generally, Connectivism is a paradigm that views learning as the process of creating and traversing networks of connections. The theory aims to illustrate how learning works in the digital age and so contends that the traditional learning theories like cognitivism, constructivism, behaviourism are less relevant in the digital age considering their inability to account for how people currently acquire and preserve knowledge. Essentially, connection is the bedrock that fosters knowledge sharing in the media world which makes this theory a particularly pertinent principle for the digital age and this study, specifically.

Review of Previous Studies

The evolving nature of digital literacy has sparked a range of reactions among scholars who continually seek clarifications on its apparently obscure terminologies and applications. Given the focus of the study, the impact of digital literacy on the learning outcomes of second language learners, it is essential to survey previous studies across borders.

Karagul et al. (2021) investigated the extent to which age, gender and school degree influenced students' digital literacy during the COVID- 19 pandemic. The authors affirm that mechanical impediments like infrastructure and technology as well as growing deficit in motivation and online teaching experiences culminated in the challenges that dominated the educational sector at the upsurge of the pandemic. The authors further acknowledged the need to level up one's digital skills given the evolving technological advancement which took the world by storm. Using 510 participants, the results revealed statistically significant correlation between students' digital literacy, gender and school degree, while age is not a statistically significant variable. The qualitative data suggested learners' attainment of satisfactory digital literacy, albeit the recognition of technology-related hitches which showed paucity of the essential technologies and difficulties in adapting to a digital approach to learning. This study demonstrates the seeming challenges experienced when certain contraptions are imposed on users for learning purpose without prior training. This study differs from the present study which focuses on the impact of digital literacy on learning outcomes among second language learners.

Lawrence and Fakuade (2021), assessed parental involvement, learning participation and the commitment to online learning of adolescent learners during the COVID-19 lockdown in Nigeria. The study aimed to ascertain the commitment of adolescent learners to online learning. According to the authors, online learning covers learning activities conducted either in hybrid or blended format over the internet. Using an online survey questionnaire, 1407 responses were received from the survey that lasted about two months constituting (male = 38.8%; female 61.2%) aged between 12 and 20 years. The descriptive statistics of frequency distribution employed for the analysis revealed significant commitment level of adolescent online learners with coefficient of $R = 0.439$ and $R^2 = 0.192$, learning participation contributed 23% ($\beta = 0.234$, $p < 0.05$) and Parental involvement showed 32% ($\beta = 0.322$, $p < 0.05$). The study affirmed significant roles of parental involvement and learning participation in the commitment of adolescent learners towards online learning during the COVID-19 lockdown in Nigeria. The authors further recommended that parents be encouraged to gravitate towards the evolving digital world, while the need for in-depth research on the subject was emphasised for future research. While this review centred on examining parental involvement and commitment of adolescent learners to online learning, the present study focuses on the impact of digital literacy on the learning outcome of students in the south eastern part of Nigeria.

Manalao, (2024) examined the link between digital literacy and learning styles of 200 students of Mindanao University High School using structured questionnaire. The author identified three learning styles to include; audio, visual and kinesthetic and equates the high level of digital literacy of the students to (x=4.20). The results demonstrated dominant learning styles of the students as the kinesthetic with (4.07) while a statistically significant relationship between the digital literacy and the learning styles of students were also indicated. This shows that proliferation in the usage of ICT tools undoubtedly plays a vital role in the attitude of students towards learning. This result may serve as basis for teachers to efficiently utilize ICT tools that support and enhance students' learning. While this review focused on the correlation between

digital literacy and learning styles of students, the present study dwells on the impact of digital literacy on learning outcomes of second language learners of English using some federal universities in the southeast as a bench mark.

Yuan, et al (2019) investigated digital literacy support for English language learners via communities of practice. Practically, it sought ways English Language Learners (ELLs) particularly, Spanish speakers could be empowered in order to embrace the evolving digital world. The study also, explored the possible constraints and opportunities for DL development within the sample group. Data were obtained through semi-structured interviews with residents of Maryland (US) who identified as Spanish-speaking ELLs. Findings disclose undue and coarse acquisition of DL under the precipice of societal pressure rather than the desire for digital proficiency. To navigate the challenges associated with digital transactions, the users often rely on knowledgeable family members but also recognise the value of participating in formal and accessible DL education programmes. However, language barriers to obtaining learning resources, in addition to time constraints and a lack of trusted support systems, is a hitch to their DL acquisition. Moreover, the authors advocate the need for adequate pedagogical teachings that embrace cultural identities of ELLs while empowering them as core consumers and initiators of information on the media. The authors suggest approaching this contentious issue from an asset viewpoint, rather than a deficit one. This study used a sociocultural perspective and critical theory to define and conceptualise ELL learning, build a common vision of digital literacies, and examine research on digital literacy practices. On the basis of the above, ELLs become engaged learners. This review differs from the present study in terms of relevance of DL on students and impact on the learning styles of second language learners.

The above reviews x-rayed the various studies done by scholars concerning digital literacy since its invention and how the swift diversion from traditional to digital learning has affected learners who still grapple with its usage. The studies identified lack of adequate training on the sides of the teachers and learners, economic instability, not to mention the pressure to familiarise oneself with the subtleties of contraptions used in digital learning as some of the key factors that undermine its full potential. In the light of the above, this study seeks to investigate the relevance of digital literacy on the academic performance of students in some tertiary institutions in the southeastern part of Nigeria, ascertain the impact of DL in their learning styles and identify the literacy levels of these study samples.

Study Design

This study adopted a cross-sectional questionnaire survey study. The questionnaire was designed in the check-list format for ease of response and the 10- item questions were made to elicit objective selections from the under listed options. To achieve the objectives of the study which are to investigate the relevance of digital literacy on the academic performance of students, ascertain the impact of DL in their leaning styles, identify the digital literacy levels of students under study and to explore the challenges of digital learning on the academic performance of students, 400 level students of five sfederal tertiary institution in the southeastern part of Nigeria were selected for the study. The copies of questionnaire were disseminated to the target population by means of class, social media platforms, especially, WhatsApp, for easy collation.

Sampling Technique

This study used the systematic random sampling for the selection of the samples for the questionnaire distribution. This involved the systematic selection of one sample from all the federal institutions in the geographical zones.

Study Instrument

Data for the study were collected using the pre-tested and validated questionnaire administered to the respondents. The questionnaire was written in English and designed in a check-list format. The purpose of the study was clearly stated to aid and ensure comprehension by the respondents. The questionnaire comprised the consent to participate which included: agreement to participate, voluntary participation, and note of confidentiality. The second part of the questionnaire consisted of 10 items which solicited responses on the impact of digital literacy, its relevance, and the possible challenges. On the flip side, structured 'Key Person Interview' was conducted with some of the teachers from the various tertiary institutions used in this study. In all, ten lecturers from each were interviewed totaling 50 interviewees.

Data Collection

Data for this study were collected from five tertiary institutions in the Southeast, Nigeria by means of questionnaire which was sent to the 300/400 level students of the institutions under study; Nnamdi Azikiwe University, Alex-Ekwueme Federal University Ndufu-Alike, Ikwo, Ebonyi State, University of Nigeria, Nsukka, University of Port Harcourt and Federal University of Technology, Owerri through the various students' social media platforms, specifically, WhatsApp. The pre-tested and validated questionnaire was sent to thes media outlets where students are known for their daily dissemination of information. The duration for the collection of data was seven weeks to make room for sufficient and voluminous responses. In all 1,250 responses were duly completed and returned via the source of dispatch.

Data Analysis

All the data obtained for this study were represented accordingly. The data from the questionnaire were presented and analysed using the frequency tables and simple percentage calculations.

T**able 1**

Demographic Details of the Respondents

Age	Percentage of Respondents
17-25	88.8
26-35	10
36- 49	0.96
>50	0
Gender	

Male	36.8
Female	63.2
Digital Literacy Level	
Excellent	37.8
Good	58.2
Fair	2.96
Poor	0.96
English Proficiency Level	
Excellent	25.9
Good	66.3
Fair	2.2
Poor	0.64

A look at Table 1 indicates the demographic details of the respondents where the highest percentage of the respondents falls with those within the age range 17-25 representing 88.8% followed by 10% as captured by respondents within the 26-35 age brackets and finally 0.96% representing 36-49% being the least participants. Ultimately, the female participants were the most active respondents with 63.2% while their male counterpart represented 36.8%. The statistics above shows the major participants for the study were mainly females. In addition, the digital literacy level of the respondents recorded 58.2% as the highest point while 0.96% as the minimal level. 66.3% respondents affirmed appreciable English proficiency and 0.64 with the least proficiency in English.

Table 2

Schools	No of Questionnaire distributed	No./% returned
UNN	250	197 (79%))
UNIZIK	250	181 (72%)
FUTO	250	169 (68%)
FUNAI	250	191 (76%)
UNIPORT	250	151 (60%)
TOTAL	1,250	889 (71.1%)

Table 2 shows the response rates from the various higher institutions. A total of one thousand two hundred and fifty copies of questionnaire were evenly distributed and the overall response rate was 61.1% with UNN having the highest return at 79% followed by UNIPORT which recorded the least return with 151%.

Key:

UNN = University of Nigeria, Nsukka

UNIZIK = Nnamdi Azikiwe University, Awka

FUTO = Federal University of Technology, Owerri

FUNAI= Alex-Ekwueme Federal University, Ndufu-Alike, Ikwo, Ebonyi State.

UNIPORT = University of Port Harcourt, Rivers State

Table 3

ITEMS	RESPONSES	FREQ.	%	RESPONSES	FREQ.	%	RESPONSES	FREQ.	%
I prefer online learning to physical learning	Yes	892	71.4	No	231	18.5	Undecided	127	10.2
I am quite skillful at navigating information for my academic advancement	Yes	853	68.2	No	229	18.3	Undecided	168	13.4
Digital literacy aids faster learning	Yes	892	71.4	No	231	18.5	Undecided	127	10.2
Digital learning is beneficial to my learning outcome	Yes	853	68.1	No	241	19.3	Undecided	156	12.3
Digital learning is more engaging than physical learning	Yes	761	61.0	No	333	26.7	Undecided	156	12,5
Digital learning has improved my learning style	Yes	892	71.4	No	261	21.0	Undecided	97	7.8
Teachers are adept at incorporating online teaching	Yes	671	53.7	No	510	41,0	Undecided	69	5.5

methods									
Digital learning fosters absolute concentration during lectures	Yes	793	63.4	No	301	24.1	Undecided	156	12.5
Digital learning should replace physical learning methods	Yes	890	71.2	No	261	20.9	Undecided	99	7.9
Digital literacy has had a positive impact on my academic journey	Yes	864	69.1	No	221	17.7	Undecided	165	13.2
Total		8361	669		2819	226		1320	106

Table 3 highlights the frequency of responses from the 1,250 respondents on the various issues raised ranging from online learning preference to physical learning methods, engagement level attained during online class, challenges and perceived impact of digital literacy on the overall learning outcome. The results provided insights on the preference of online lectures to physical learning with a record of 71.4% of the respondents who demonstrated strong affinity to it while 18.5% showed vehement displeasure and 10.2% were rather ambivalent on their stand. 69.1% on the other hand, affirmed positive impact of digital literacy on their learning outcomes, 17.7% opposed that view while 13.2% were indecisive in their response.

Result and Discussion

The advancement of digital literacy continues to impact the educational world, making it a global survival skill needed to navigate the ever-evolving digital space. In fact, that digital literacy has assumed a pride of place in the tech realm providing indisputable knowledge and apposite attitudes required to access, create, use, and evaluate digital information effectively, efficiently, and ethically is a given. Given its integration in the informative domain, 71.4% of the respondents affirmed their preference for this method of learning to its physical counterpart as opposed to 18.5% who were rather apathetic to it and 10.2% who were totally indecisive. This result shows the extent to which digital literacy has tried to surpass the traditional teaching method.

The celerity with which digital literacy permeates the educational system underscores the need for all to join the moving train of tech adroitness in order to traverse this cutting-edge

technological advancement. This need for adroitness corresponds to the responses derived from the questionnaire on the skill level of respondents. Findings portrayed 68.2% as grossly unskilled enough to steer the digital world for academic enhancement compared to 18.3% who felt indifferent with a paltry 13% unsure of their stand. Although, this mastery is essential to survive in the digital era as well as perform digital tasks effectively, Jones-Kavalier and Flannigan (2008), assert that inadequacy of training remains a challenge. Furthermore, in a bid to ascertain respondents' view on the beneficial aspect of digital literacy on their learning outcome, 61.8% dissented on the DL being instrumental to their learning outcome, 19.3% assented in their opinion while 12.3% were utterly undecided in their response. Similarly, among the plethora of roles associated with DL, its educational implication remains paramount as it could make or mar the efforts of the students. Further results indicate that 71.4% of the respondents conceded to the role of DL in improving their learning style, 21.0% showed contrastive opinion and again, 7.8% were undecided in their response. This is a clear testament to the unwavering role DL plays to supplement the learning styles of students for optimal academic results. This corroborates Manalao's (2024) study which views the proliferation in the usage of ICT tools as vital in the attitude of students towards learning. Further results reveal the insight by the respondents concerning the attention span of learners during an online class 63.4% confirmed immoderate concentration while 24.1% shared objective view. This indicates that DL has adverse effect on the concentration level of students. Considering the myriads of roles DL plays in the academic pursuit of students, its positive impact is essential in streamlining the appropriateness or otherwise of the conception in learning. Results presented 69.1% of the respondents avowed the impact of DL in their academic journey compared to 17.7% who think otherwise with undecided response captured at 13.2%. The study demonstrates that digital literacy has in no small measure impacted positively on learners' learning outcomes but does not negate the listening and concentration span of students during online lessons. This aligns with Larraz, 2013; Brata et al. (2022), study which is inextricably linked to the social and educational demands of the present world. As a critical life skill, digital literacy is important not only for career readiness, but also educational and social success.

Furthermore, the structured and Key Person Interview which was designed to supplement and validate the findings of the questionnaire survey confirmed that instructors have a hard time in incorporating digital learning into other teaching method as a handful of them confirmed lack of interest to navigate the digital space. Also, regarding the preference of online learning to physical teaching, a good number of the interviewees asserted the indisputable gains of physical learning, ranging from improved teacher/student relationship to improved high degree of concentration as opposed to intractable distractions known to emanate from online learning. This does not obviate the fact that digital literacy could facilitate teaching if properly applied particularly the versatility of knowledge acquisition as well as a fill-in strategy in case of absence. Consideration of the constraints of adopting online teaching method was met with varying reactions from the interviewees. Their views spanned poor access to internet, lack of digital skills among teachers, fund issues, high cost of data /epileptic power supply among others.

On the final note, the interviewees identified the notable impact of digital literacy on learning outcomes but also harped on some key constraints. Some of these are nearly, keeping abreast with research trends, encouraging diverse learning styles for the students, enhancing learning engagement, keeping learners in tune with global educational practices and development of critical thinking and innovation. From the above therefore, digital literacy has yet to attain a

pride of place in the educational sector in Nigeria, however, a hands-on-approach should be adopted to enhance its operation in the academia.

Conclusion

In a nutshell, this study not only explored the recurrent issues in the integration and impact of digital literacy on the learning outcomes among second language learners, it also exposed the challenges prevalent in its efficiency, such as, the preference by some institutions of traditional learning method. The various results however, indicate that both learners and instructors who still show preference to the traditional learning method. The various results indicate that both learners and instructors undoubtedly grapple with full integration of digital learning, thereby necessitating adequate training of learners and instructors. In addition, higher levels of digital literacy could result in improved language proficiency, increased autonomy, and enhanced collaboration skills, which are significant factors that make for effortless and effective teaching methods. The study further recommends the need for systematic digital literacy training programs for both learners and instructor.

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