

Use of ICT Skills and Blended Learning during Covid-19 Pandemic by Undergraduate Students of Department of Library and Information Science, University of Maiduguri, Nigeria

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Abstract

Learning is a mandatory activity that students must engage in to acquire knowledge and skills necessary for personal, societal and national development. Therefore, it is part of pedagogical strategy for students to assemble in schools for learning. However, the outbreak of coronavirus in late 2019 has led to the introduction of social distancing for avoidance of physical contact to mitigate the spread of the virus. This study investigates the ICT skills of Undergraduate students in relation to their expectations on Blended Learning amidst coronavirus pandemic as they return back to the schools in University of Maiduguri, Borno State. Survey Research Design was used for study. Two research questions and one hypothesis were used for this study. Using questionnaire as instrument for data collection, 306 respondents sampled from 1,500 target population of Library and Information Science students were involved in the study. Descriptive statistic of frequency count, percentage, mean and standard deviation as well as inferential statistics of PPMC were used in analyzing the data. The findings revealed students that ICT skills of undergraduate students were below average ($\bar{x}_w = 2.48 < \bar{x} = 2.50$) and the expectation of students on Blended Learning were also low ($\bar{x}_w = 2.49 < \bar{x} = 2.50$). However, the p -value $< \alpha = 0.05$ and Correlation coefficient ($r = 0.285$) indicated that there is significant positive but weak relationship between ICT skills and expectation on Blended Learning of undergraduate students in learning library courses in University of Maiduguri. It is also discovered that the current level of ICT skills of undergraduate students can only have 28.5% impact on their expectations on BL. It is recommended that Library and Information Science Department should put in place ICT learning facilities and blend every library course with ICT at all levels to improve the ICT skills of students while institutionalizing hybrid learning culture to curtail the spread of Covid-19 among students.

Keywords: Blended Learning, ICT skills, Library courses, Covid-19, Undergraduate Students.

Introduction

The emergence of Corona virus, also known as COVID-19, in late 2019 is shifting every human activity, including educational adventure, away from normal norm to unprecedented living space. The accompanying consequences are multifarious (Amzat, Aminu, Kolo, Akinyele, Ogundairo & Danjibo, 2020). Every sector of human lives is expecting a different approach, and educational sector is not an exception. The normal educational setting in most African countries, including Nigeria, has flourished over the years but may not be fully suitable within the wave of COVID-19, pandemic, which poses danger to human's social interactions and affiliation. To curb the spread of the virus, restriction, suspension and stoppage of activities—social, economic, political and educational—were imposed (*Omaka-Amari, et. al. 2020*). Curtailing human affairs to a standstill has always created many challenges to human being, the impact of which cannot be quantifiable (Agusi, *et. al.*, 2020). It is in response to this situation that new approach to learning and teaching is being envisioned and implemented in some level of education—primary, secondary and tertiary institutions.

The deployment of conventional and online pedagogy in higher institutions is offering new approach to learning and teaching in compliance with the requirement of COVID-19 rules such as Social Distancing (Agusi, *et. al.*, 2020; Ajisegiri, Odusanya, & Joshi, 2020). Thus, the expectations of students—being the learners—in this emerging pedagogy, in relation to their ICT skills in a Blended Learning (BL) environment deserve thorough look. Kintu., Zhu, and Kagambe (2017) reiterated that a blend of classroom and web-based teaching and learning offers access to the widest range of learning modes and methods for developing student skills and expertise as learners should be emphasized. It is reported in many studies that Blended Learning has demonstrated an increase

in learners' ability to learn collaboratively, think creatively, study independently and tailor their own learning experiences to meet their individual needs (Kintu., Zhu, and Kagambe 2017).

Engagement in Blended Learning requires that both the teachers and learners are ICT skillful (Bryan & Volchenkova, 2016), much as technological tools such as Computer systems, Internet, Intranet, Web portals and digitized lecture notes have to be in place (Jeffrey, Milne, Suddaby.& Higgins, 2014). To ensure a full-fledged learning interactions among students, and between students and lecturers, ICT skills and properly blended courses are essential prerequisite (Bryan & Volchenkova, 2016).

Basic ICT skills required of students may include knowing concepts and basic functions of common computer operating systems, how to connect to Internet through smart phones and computer systems, use web browsers (e.g., Firefox, Chrome, Internet explorer), how to use search engines (e.g., Google, Bing, Duckduckgo, Yahoo, etc) (Dziuban, Graham, Moskal, Norberg, & Sicilia, 2018) to find information on the Web, how to use Uniform Resource Locator (URL) to access databases or learning web-portal, how to download digital information resources in any format (e.g., PDF, DOC/X) and use it, how to format documents (copy, past, delete, bold, italicise, change font size, font type, etc.) and how to copy files from hard disk to storage devices and vice versa (Dziuban, *et. al.*, 2018). With these skills, social distancing may be maintained while social interacting through Blended Learning can be established (Kiran & Dangwal, 2017; Dziuban, *et. al.*, 2018).

Statement of the Problem

In higher institution of learning where convergence of both teachers and mixed-up students is mandatory in a classroom, the chances of contacting coronavirus may be high. By convention,

students are used to social interactions of shaking hands, sharing writing and reading materials, and sitting together on the same or closed chairs. Additionally, clustering of students during testing and examinations as well as exchange of answer sheets between teachers and students can also facilitate spread of virus. Therefore, to avoid or minimize virus attack on students or teachers, new pedagogical system needs to be introduced in learning and teaching environment. It is in the light of these challenges that this study aims to envision the expectations of students in relation to their ICT skills in Blended Learning environment in University of Maiduguri, Borno State.

Literature review

Blended Learning usually referred to as mix-learning, hybrid or mixed--mode courses (Thompson, 2020) is an innovative learning strategy that encompasses the benefits of face-to-face learning and ICT supported learning. Jeffrey, Milne, Suddaby and Higgins (2014) describe Blended Learning as a mode of teaching that eliminates time, place, and situational barriers, whilst enabling high quality interactions between teachers and students (Jeffrey, et al, 2014; Zhang, 2014). According to the authors, BL supports the practice of distance education that emphasized flexibility of time, place, and pace of student learning. It covers computer assisted learning, collaborative learning and constructive learning. The benefits of BL are manifold. As pointed by Kiran & Dangwal, (2017), the BL can be beneficial to the University, Faculty and students in the following ways:

- Blended courses can be part of a strategy to compensate for limited classroom space, as well as a way to think differently about encouraging faculty collaboration in the University.
- Blended courses can be a method to infuse new engagement opportunities into established courses or, for some, provide a transitional opportunity between fully face-to-face and fully online instruction for the Faculty.

- Blended courses offer the conveniences of online learning combined with the social and instructional interactions that may not lend themselves to online delivery (e.g., lab sections or proctored assessments) to students.

For the successful implementation of blended learning, the unwavering efforts, right attitude, considerable amount of budget, encouraging and motivated teachers and students are fundamentals. In other words, both teachers and students must be proficient in ICT skills to excel in blended learning environment.

In searching for accurate definition of Blended Learning, Caner (2012) stated that in the course of educational developments, alternative content delivery techniques or technologies have been implemented into the teaching environments in the recent years, thereby leading to capitalizing on the advantages of instructional delivery modalities while minimizing the disadvantages, by combining the most functional elements of the instruction in learning environments. The author calls this paradigm shift a 'Blended Learning'. The concept of Blended Learning has been echoed in several divergent conceptualizations. Drawing from different perspectives over the years, situations have called for different mode of instructional strategy and delivery of educational contents. At the eve of crisis, either within educational arrangement or desire for something better, instructional systems and materials are being offered not only to dissolve the challenges but also to address a new demand for high quality in education.

Additionally, to curb the spread of COVID-19 pandemic, further reasons for advocating both traditional learning pedagogy and ICT-based learning environment are found in the words of Kiran and Dangwal (2017) where they espoused that "the educational system at present is in a transition stage. To meet the challenges of expansion and for catering individuals need it is better to adopt new technologies and explore new paths to reach the goal of quality educational opportunities for

all”. They further proclaimed that, “at the same time, due to various factors like deficient budgets, lack or inadequate facilities, advantages of face-to-face interaction, it is not completely needful to leave the traditional modes of knowledge transfer”. Since change is inevitable in educational growth, precipitated by desire for better and high quality education, while mitigating COVID-19, Blended Learning offers unique opportunities for both educators and students with combining face-to-face and online learning system.

Blended Learning has several advantages in educational setups. It facilitates face-to-face teaching, student interaction with course contents (Yu, Mo, Zhang, Boswell, & Rozelle, 2016), peer group interaction, group discussion and exchange of ideas, accessing e-library, engaging in virtual classroom, online assessment (Zhang, 2014), e-tuitions, Accessing and maintaining educational blogs, webinars, viewing expert lectures in YouTube, online learning through videos and audios, and virtual laboratories (Kiran and Dangwal, 2017). ICT skills have been recognized as prerequisite and essentials for successful involvement in IT-based or related learning and teaching in this 21st century. Learning to acquire ICT skills take different time or stage in different people as they see the need for it. The proliferation of computer systems and smartphones have given nobody an acceptable excuse remain behind the requirement for being in IT skillful or knowledgeable.

The situation in most secondary school in Nigeria that have no access to computer systems over observed long period of time, the tendency that many newly admitted students in higher institutions may demonstrate low or lack of skill in ICT can be quickly noticed when faced with the need to participate in blended learning without putting in place standard ICT training outline, fully reflected in the courses to be offered by the students. In other words, ICT skills acquisition is a continuous activity that should be emphasized in an information economy as we have now. At

present, the situation created by COVID-19 pandemic is actually necessitating the inclusion of ICT-based learning into an existing instructional parameter of educational system in Nigeria. Therefore, ICT skills and knowledge are highly required for Blended Learning (Lu & Price, 2018; Lu, Tsai, & Wu, 2015; Lu, Dear, Johnston, Wootton, & Titov, 2014).

Research Questions

1. What is the level of ICT skills of Undergraduate Students in University of Maiduguri?
2. What is the expectation of Undergraduate Students on Blended Learning in University of Maiduguri?

Research Hypothesis

The following null hypothesis is tested at 0.05 significant level with 95% confidence.

H_0 = There is no significant relationship between ICT Skills and Expectation on Blended Learning of Undergraduate students in University of Maiduguri

Research Methodology

Survey research design was adopted for this study. Self-designed questionnaire with the aid of Google Form and Whatsapp groups was used in collecting data from 306 Undergraduate students undergoing Library and Information Science programme that responded to the questionnaire. The Google form was stopped after the expected sample of 306 respondents was reached. The sample size was determined from subjecting the research population of 1500 to Raosoft Sample Size Calculator. Two research questions were developed and one null hypothesis was formulated. Descriptive statistics of frequency count, percentage, mean and standard deviation was used to present and analyze the research questions, whereas inferential statistic of Pearson Product Moment Correlation (PPMC) was used to test the hypothesis at 0.05 alpha level.

Data Presentation and Analysis

Research Question one:

What is the level of ICT skills of Undergraduate Students in University of Maiduguri?

Table 1: Level of ICT skills of Undergraduate Students in Study Area

SNO	ICT Skills of Undergraduate Students	SA (Freq/%)	A (Freq/%)	D (Freq/%)	SD (Freq/%)	N	\bar{X}	Std.	Remark
1.	I understand the concepts and basic functions of common computer operating systems	56(18.3)	166(54.2)	56(18.3)	28(9.2)	306	2.82	.837	Agreed
2.	I can use digital information resources on CD/DVD/computer system	62(20.3)	31(10.1)	93(30.4)	120(39.2)	306	2.11	1.138	disagreed
3.	I can copy files from hard disk to storage devices and vice versa	71(23.2)	31(10.1)	136(44.4)	68(22.2)	306	2.34	1.067	disagreed
4.	I can format documents (copy, past, delete, bold, italicise, font size, font type, etc.)	83(27.1)	40(13.1)	63(20.6)	120(39.2)	306	2.28	1.238	disagreed
5.	I can connect to Internet through smart phones and computer systems	19(6.2)	174(56.9)	57(18.6)	56(18.3)	306	2.51	.862	Agreed
6.	I can use web browsers (e.g., Firefox, Chrome, Internet explorer) to find information on the Web	120(39.2)	94(30.7)	46(15.0)	46(15.0)	306	2.94	1.070	Agreed
7.	I can use Uniform Resource Locator (URL) to reach databases and search digital information resources	10(3.3)	32(10.5)	198(64.7)	66(21.6)	306	1.95	.671	disagreed

	I can use search engines (e.g., Google, Bing, Duckduckgo, Yahoo, etc) to find information on the Web	62(20.3)	121(39.5)	30(9.8)	93(30.4)	306	2.50	1.126	Agreed
8.	I can download digital information resources in any format (e.g., PDF, DOC/X) and use it	98(32.0)	112(36.6)	56(18.3)	40(13.1)	306	2.88	1.007	Agreed
Weighted Mean							2.48		

Source: Field Survey, 2020;

Key: SA='Strongly Agree', A='Agree', D='Disagree', SD='Strongly Disagree'; Weighted Mean ($\bar{x}_w = 2.48$), Decision Mean ($\bar{x}_d = 2.50$), N= 306, \bar{x} = Means, Std. = Standard Deviation

Table 1 presents the various ICT skills on which the Undergraduate students constituting the respondents of this study were measured. Based on the data in the Table 1, the Mean score for each ICT skills demonstrate different level of students' proficiency. Knowledge of concepts and basic functions of common computer operating systems ($\bar{x} = 2.82$), how to use Internet through smart phones and computer systems ($\bar{x} = 2.51$), how to use web browsers (e.g., Firefox, Chrome, Internet explorer) to find information on the Web ($\bar{x} = 2.94$), how to use search engines (e.g., Google, Bing, Duckduckgo, Yahoo, etc) to find information on the Web ($\bar{x} = 2.50$) and how to download digital information resources in any format (e.g., PDF, DOC/X) and use it ($\bar{x} = 2.88$) have Mean score greater than or equal to Decision mean ($\bar{x}_d = 2.50$).

However, in other aspect of ICT like using digital information resources on CD/DVD/computer system ($\bar{x} = 2.11$), copying files from hard disk to storage devices and vice versa ($\bar{x} = 2.34$), formatting documents (copy, past, delete, bold, italicise, font size, font type, etc.) ($\bar{x} = 2.28$), and using Uniform Resource Locator (URL) to reach databases ($\bar{x} = 1.95$) and search digital information resources ($\bar{x} = 1.95$).

On the whole, the weighted mean for ICT skills ($\bar{x}_w=2.49$) < decision mean ($\bar{x}_d=2.50$). This implies that the general level of ICT skills of undergraduate students required of them to engage in BL while offering library course in University of Maiduguri is below average. This discovery does not mean absence of ICT skills but suggests that an improvement is required, particularly in the areas highlighted, if they should be capable of performing excellently in BL pedagogy.

Research Question two:

What is the expectation of Undergraduate Students on Blended Learning in University of Maiduguri?

Table 2: Expectation of Undergraduate Students on Blended Learning in Study Area

SNO	Expectation on Blended Learning	VH (Freq/%)	H (Freq/%)	L (Freq/%)	VL (Freq/%)	N	X	Std.	Remark
1.	Student interaction with course contents	89(29.1)	72(23.5)	78(25.5)	67(21.9)	306	2.60	1.124	Very high
2.	Peer group interaction	81(26.5)	26(8.5)	105(34.3)	94(30.7)	306	2.31	1.167	Low
3.	Group discussion for exchange of ideas	136(44.4)	31(10.1)	71(23.2)	68(22.2)	306	2.77	1.231	Very high
4.	Accessing e-library	120(39.2)	40(13.1)	63(20.6)	83(27.1)	306	2.64	1.249	Very high
5.	Virtual classroom	23(7.5)	56(18.3)	56(18.3)	171(55.9)	306	1.77	.997	Very low
6.	Online assessment	117(38.2)	99(32.4)	42(13.7)	48(15.7)	306	2.93	1.071	Very high
7.	Accessing educational blogs	10(3.3)	32(10.5)	198(64.7)	66(21.6)	306	1.95	.671	Low
8.	Webinars	62(20.3)	121(39.5)	30(9.8)	93(30.4)	306	2.50	1.126	High
9.	Viewing expert lectures in YouTube	92(30.1)	103(33.7)	66(21.6)	45(14.7)	306	2.79	1.032	High
10.	Online learning through videos and audios	95(31.0)	89(29.1)	48(15.7)	74(24.2)	306	2.67	1.153	Very high
Weighted Mean							2.49		

Source: Field Survey, 2020,

Key: VH='Very High', H='High', L='Low', VL='Very Low', Decision mean ($\bar{x}_d = 2.50$), Weighted mean ($\bar{x}_d = 2.49$), N= 306, \bar{x} = Means, Std. = Standard Deviation.

Table 2 shows the data on the expectations of students in Blended Learning (BL) situation with high or low Mean scores. The BL features on which students have various levels of high expectations greater than Decision mean ($\bar{x} = 2.50$) are Student interaction with course contents ($\bar{x} = 2.60$), Group discussion for exchange of ideas ($\bar{x} = 2.77$), Accessing e-library ($\bar{x} = 2.64$), Online assessment ($\bar{x} = 2.93$), Webinars ($\bar{x} = 2.50$), Viewing expert lectures in YouTube ($\bar{x} = 2.79$) and Online learning through videos and audios ($\bar{x} = 2.67$).

In another way, the features of BL on which students expressed their expectations which were found to be lower than Decision mean ($\bar{x} = 2.5$) were Peer group interaction ($\bar{x} = 2.31$), Virtual classroom ($\bar{x} = 1.77$) and Accessing educational blogs ($\bar{x} = 1.95$). By summary, looking at students' expectations, the Weighted mean ($\bar{x} = 2.49$) < Decision mean ($\bar{x} = 2.50$).

Hypothesis Testing:

H₀ = There is no significant relationship between ICT Skills and Expectation on Blended Learning of Undergraduate students in University of Maiduguri

Table 1: Summary of PPMC for ICT Skills and Expectation on Blended Learning of Undergraduate students in University of Maiduguri

	Mean	Std.	N	r	p-value	Decision
ICT skills	2.42	.507	306	0.285	0.001	Rejected
Expectation on Blended learning	2.49	.362	306			

Decision: Hypothesis tested at $\alpha=0.05$; If $p\text{-value} < \alpha = H_0$ rejected; If $p\text{-value} > \alpha = H_0$ retained

Table 3 presents data on the ICT skills and expectation on Blended Learning of undergraduate students in learning library course in University of Maiduguri, Borno State. The table indicates the Mean score, Standard deviation, number of respondents, Correlation (r), Calculated probability (p=value) and decision rule. However, the data demonstrates that there is significant relationship between ICT Skills and expectation on Blended Learning of Undergraduate students in relation to learning library courses in University of Maiduguri. ICT skills of undergraduate students

showcased Mean score ($\bar{x} = 2.42$, Std. = 0.507) and expectation on Blended learning with Mean score ($\bar{x} = 2.49$; Std. = 0.362). Pearson Product Moment Correlation on ICT Skills and Blended Learning value is $r=0.285$ at 0.05 level of significance ($P<0.05$). Therefore, the null hypothesis was rejected. Thus, there is significant positive but weak relationship between ICT Skills and expectation on Blended Learning of Undergraduate students on learning library courses in University of Maiduguri. Comparing Mean score, the ICT skills ($\bar{x} = 2.43$) < expectation on BL ($\bar{x} = 2.49$). This implies that the level of ICT skills of undergraduate students under the study may not be sufficient to ensure successful participation in BL pedagogy.

Discussion of Findings

Library and Information Science is a profession that have been evolving over the years. At every turn of societal and educational development, libraries have been flourished with trained and skillful librarians from Library Schools. Nevertheless, the speed of development in ICTs have left many fields of study, including Library and Information Science, with wavering opportunities to reckon with. Thus, the evolving COVID-19 is an awakening call to all human affairs to exploit the opportunities in ICTs to reduce the risks of being exposed to the danger of viruses. For students and educators, skills in ICT cannot be ignored, if Blended Learning is to be embraced.

The findings about the level of ICT skills of undergraduate students in University of Maiduguri is $\bar{x}_w=2.49 < \bar{x}_d=2.50$, suggesting that the general level of ICT skills of undergraduate students required of them to engage in BL is below average. This discovery does not mean absence of ICT skills but suggests that an improvement is required, particularly in the areas highlighted, if the students should be capable of performing excellently in BL pedagogy. This study is supported by Krasnova and Vanushin (2016) and Lu and Price (2018) when they reported that in blended learning environments, students need ICT skills that are related to interactions with peers,

collaboration with academics, and mentors, independent learning in data retrieval and data management. Similarly, Pratt (2014) had forewarned that, for mixed-mode courses to be effective, information and communication technology (ICT) needed to become an integral part of the social context in which teaching and learning take place, and not an incidental adjunct.

The finding is line with the views of Yu, *et. al.* (2016) when they emphasized that ICT skills and learner's readiness offer more glaring opportunities for learners to the extent that insufficient skills can mean incapability, the result of which may lead to unsuccessful blended system. They explained that positive expectations from educators and learners can gear up understanding on the modalities for effective Information and Communication Technology (ICTs) necessary or required as gateway for successful pedagogical arrangement in BL.

This findings also concord with Crawford and Jenkins (2017) and Kiran and Dangwal (2017) when they observed that mixing face-to-face system of learning with online driven scenario can have a monumental impacts on the whole expectations of learners and teaching group whereby efforts on implementation on all tools for successful blended learning can constitute factors. This implies that the success of blended learning rely solidly on benefits that students stand to derive and ease with which the educators would likely handle BL Therefore, Krasnova and Vanushin (2016) suggested that perception of students has to be heightened, their preparedness must be upheld and concerted efforts should be established to gain much of what is expected. The findings regarding Blended Learning is consonant with study carried out by Charls, *et. al.* (2018) in which they reported that students' satisfaction and attitudes can be measured through data collection protocols, including common student ratings, or student perception of instruction instruments. This processes gives chance to understand the expectation of students so as to prepare for the best and worst should blended learning should be institutionalized. This study discovered that ICT skills is

fundamental to Blended Learning and that the respondents under study possessed ICT skills below average with low expectations on Blended Learning. With these findings, conclusion can be drawn that ICTs, motivational strategies, enabling environment and full-fledged blended library courses require urgent attention of stakeholders and course management team in the Department of Library and Information Science, University of Maiduguri, Borno State if the spread of COVID-19 among student must be mitigated or avoided.

Conclusion

This study explored the ICT skills and expectations on Blended Learning of Undergraduate students in University of Maiduguri, Borno State amidst COVID-19 pandemic. Efforts is made to understand the nature of students' expectation when introduced to Blended Learning pedagogy with its various benefits. The study found out that the students of Library and Information Science in University of Maiduguri require drastic training in ICT skills if they are to be capable of performing excellently in Blended Learning scenario due to the fact their ICT skills ($\bar{x}_w=2.49$) and expectations on Blended Learning ($\bar{x} = 2.49$) were little below average ($\bar{x}_d=2.50$). However, since the correlation ($r=0.285$) reveals positive but weak relationship between students' ICT skills and expectation on Blended Learning, it therefore implies an increase in ICT skills will also corresponding lead to higher expectations on Blended Learning and vice-versa.

Recommendations

The implementation of Blended Learning requires the efforts of educators, learners and department for every course to be taught. Nevertheless, this study recommends that Library and Information Science Department should put in place ICT learning facilities and blend every library course with ICT at all levels to improve the ICT skills of students while institutionalizing hybrid learning culture to curtail the spread of Covid-19 among all and sundry.

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