



Perceived Influence of Digital Technology on Undergraduate Students' Academics in University of Maiduguri, Borno State, Nigeria

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Abstract

This study was conducted to determine the influence of digital technology on undergraduate students' academics. It was guided by two objectives and one null hypothesis. Descriptive survey research design was adopted for the study. A sample of 378 undergraduate students was used for the study using a multistage sampling technique. Perceived Influence of Digital Technology on Undergraduate Students' Academics Questionnaire (PIDTUSAQ) was used as an instrument for data collection. Cronbach Alpha analysis was used to estimate the internal consistency of the instrument and reliability coefficient value of 0.79. Research question was answered with descriptive statistics of mean and standard deviation. The null hypothesis was tested using independent t-test at 0.05 level of significance. Data analysis was done using the Statistical Package for Social Sciences (SPSS) version 23. Findings revealed negative influence of digital technology on undergraduate students' academics as most of the students struggle with balancing the use of their smart phones/computers for pleasure and proper academic engagement. It was also discovered that gender had influence on the impact of digital technology on undergraduate students' academics with females being the most influenced. Based on this, it was recommended that time management should be emphasized among undergraduate students to prevent distractions orchestrated by the inappropriate use of digital technology. Time hiatus for essential activity should be recognized and organized by students.

Keywords: Perceived, Influence, Digital, Technology, Undergraduate Students, Academics

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Introduction

The prevalence of digital technology in modern society like Facebook, Youtube, Blogs, Twitter, Instagram and LinkedIn has become an indispensable part of students' lives. This was orchestrated by the availability of digital devices, internet connection and instant access to digital resources among a number of students irrespective of their background or geographical location. Digital technology encompasses electronic tools, systems and devices such as multimedia and mobile phones, tablets, notebooks, laptop, iPads, word processors, e-mails, social media, online games and the Internet (Alhumaid, 2019). These technologies generate, store, process (edits) and communicate information in various forms.

The spur for the 21st century learners is proficiency in use of digital technology. It is imperative for students to keep up with

modern digital trends while still obtaining a deep understanding of course content (D'Angelo, 2018). According to Reese (2021), digital technology can have positive effects on students' learning in higher education. Undergraduate students as defined in this study are students in the University which is a tertiary institution. This penchant towards technology-enhanced and incisive society as well as the affordability of the digital devices have made majority of undergraduate students enthused with digital technology. This is of great importance to students as they are daily exposed to loads of information reaching them via a variety of technological devices. Information accessed through digital technologies promotes innovation, increase productivity and enrich quality of lives (Olaore, 2014). The integration of digital technology in classroom environments ensures students are motivated, active and keen to learn. Reese (2021) hinted

that technology helps students enjoy their classes and have opportunity to access and complete their work, hence continuous engagement is made possible. With digital technology, students are presciently more capable to cope with problems independently; therefore, Hairon and Chai (2017) portray the teacher as designer of learning environments and no longer the transmitter of information.

Olaore (2014) further evoked that ICT has proven to be valuable in solving problems and accomplishing task in education and many other human endeavours. Hence, digital technology supports conventional classroom work as materials can be downloaded from the Internet which aid in the design and development of learning materials. Social networking sites (SNS) allow young adults to discuss about class materials, to share academic information and school related issues, to plan for a project (Salas & Alexander, 2008). Digital devices provide access to electronic teaching materials such as books and journals which can be stored and also, analyzed. In addition, digital technology makes learning more vivid and engaging. Using a sample of 381 higher education students, Wekerle et al. (2020) investigated if student engagement depends on whether technologies are implemented in class or not, and how this affects learning outcomes. Results indicated that when technologies were implemented in class, students felt encouraged to engage in more constructive, but also in more passive and active activities as compared to when no technologies were used. Furthermore, student engagement in active, constructive, and interactive activities was positively associated with learning outcomes. Therefore, digital technology becomes effective to students when utilized to encourage students' engagement in productive and interactive academic activities as opposed to passive and active learning activities.

It is important to note that incorporating the use of several technological applications allows for students to participate in higher-order thinking, enhance communication, engage in collaborative problem-solving activities and discussions, critically reflect on content and expand digital competencies (Schindler, Burkholder, Morad & Marsh,



2017). Also, digital technology facilitates assessments as well as independent study and individual instruction especially on the open distance-learning programme. It further plays key role in educational administration as students' data, personnel administration, purchasing, supplies and advertisement can be handled with ease using digital technology (Olaore, 2014). Generally, the benefits of digital technology cannot be overemphasized.

Despite the enormous importance of digital technologies, some disadvantages abound among students. Students' prolonged periods of sitting could create medical issues such as hyperactivity, obesity, and health other issues. Prolonged use of digital devices could also interfere with sleep patterns as Gaille (2018) maintained that such individuals disengage with their natural circadian rhythm. In view of this, the United Nations International Children's Emergency Fund (UNICEF, 2017) has warned that digital technology and interactivity pose risks to safety, privacy and well-being of individuals, magnifying threats and harms that many might face offline. Furthermore, unbridled over-dependence on technology has made students become indolent. The study by Gök (2015) was conducted on 220 volunteer university students (33% female and 67% male) with ages between 18 and 20 in Torbali Technical Vocational School of Higher Education at Dokuz Eylul University, Turkey. Findings revealed that digital devices and SNS had negative impact on students' knowledge and learning as most students spent more time on computers and smartphones posting on Facebook or Twitter, listening to music, watching movies, playing games, checking e-mails and surfing on the internet than academic courses. Also, there was not any significant difference between genders [$df = 218, t = 1.017, p > 0.05$].

The study by Sun, Lee, Lee and Law (2016) on 259 students at a public university on the West Coast of the United States posited that problems associated with digital technology among students within the classroom are limited technical ability of students, distraction with other applications and setting boundaries between class and personal life. The researchers have also observed incessant and engrossed use of digital technologies causes students to lose track of time. This

buttressed by Gaille (2018) who posited that the average person checks the smartphone about 100 times per day; this can be distracting to students.

Furthermore, Olaore (2014) in his article titled "The Impacts (Positive and Negative) of ICT on Education in Nigeria" maintained that students can get captivated by the technology aspect, rather than the subject content. Facebook, Twitter, Youtube, Instagram and other social media networking sites can be a distraction to living and learning in the real world. This distraction could have colossal influence on students' study hours and academics in general. In addition, Alhumaid (2019) stressed that the most recurrent effects of technology to education include deterioration of students' competencies in reading, writing, and arithmetic, which are the basic three skills any student is expected to master; dehumanization of the educational environment and distortion of the relationship between teachers and students; and isolation of students in a digital and virtual world that distances them from any form of social interaction.

The study by Purcell, Buchanan and Friedrich (2013) with a sample of 2,462 teachers from the U.S. A. and Puerto Rico revealed that 68% of surveyed teachers reported that digital tools make students take shortcuts, instead of investing any effort in writing, 67 % of students reported to having difficulty reading and comprehending complicated texts and 46 % of students stated that digital tools make them write fast and carelessly. The study further stated out that students tend to use more abbreviations in their writings, as a result of their manner of writing when communicating electronically. As digital technologies are being increasingly encouraged in education, it is vital to monitor their influence on students' academics. It is in view of this that this study becomes expedient.

Statement of the Problem

Digital technology provides a window of opportunity for educational institutions and other organizations to harness and use technology to complement and support the teaching and learning process. With advocacy for digital-aided teaching and learning, University of Maiduguri has made huge



investments in ICT, however, the University still faces the challenge of how to transform students learning process to provide students with the skills to function efficiently in this dynamic, information-rich, and constantly changing environment. Various authors and educators have emphasized the enormous importance of digital technology among undergraduate students. However, many educators and parents are worried that students spend too much time using digital technology. Some institutions and instructors have banned the use of digital technology in classrooms believing that it negatively impacts students' attention, engagement and academics in general. The researchers of this study as lecturers in a higher institution have also observed that students spend so much time on their digital devices socializing rather than studying. This could be a distraction to their academics. In view of the fact that students' academics remain central in their educational pursuit, the researchers wondered what the influence of the use of digital technology could be on undergraduate students' academics. It is against this backdrop that this study examined the perceived influence of digital technology on undergraduate students' academics in University of Maiduguri, Borno state.

Objectives of the Study

The study seeks to determine:

1. the perceived influence of digital technology on undergraduate students' academics.
2. if digital technology would not significantly influence male and female undergraduate students' academics.

Research Questions

The following research questions were posed to guide the study:

1. What is the perceived influence of digital technology on undergraduate students' academics?

Hypothesis

The following null hypothesis was tested at 0.05 significant level:

- H₀₁:** Digital technology would not significantly influence male and female undergraduate students' academics.

Methodology

The research design adopted for the study was a descriptive survey. The population for this study involved 15,023 undergraduate students from 10 departments in University of Maiduguri, Borno State. The study sample comprised 378 undergraduate students using multistage sampling technique. At the first stage, five faculties (Arts, Engineering, Allied Health sciences, Education and Management Sciences) were selected from University of Maiduguri using simple random sampling. The second stage entailed simple random sampling in selecting ten departments (English and Languages, History, Electrical and Electronics Engineering, Computer Engineering, Education, Physical Education, Physiotherapy, Medical Laboratory Science, Business Administration, Public Administration). At the third stage, 200 and 300 levels were randomly selected. Stage four involved the use of simple random sampling to select 38 students from each eight departments and 37 students from each two departments yielding a total target sample of 378 undergraduates for the study.

A researcher-made instrument titled "Perceived Influence of Digital Technology on Undergraduate Students' Academics Questionnaire (PIDTUSAQ)" was used to obtain information from the students. The questionnaire was divided into two sections (A and B). Section A obtained personal data of respondents while Section B consisted of 15 items that elicited responses from the respondents on the undergraduate students' perceived influence of digital technology on their academics with response options: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). With a



maximum score of 60 and minimum score of 0, the instrument had ranked scores as follows; 0 to 30 indicated positive influence and 31-60 implied negative influence of digital technology on students' academics. Some items (2, 4,6,11 and 12) in the scale were reversed to serve as distracters.

To ensure validity, the instrument was thoroughly scrutinized by experts from Educational Technology and Measurement/Evaluation Units of the Department of Education, University of Maiduguri. A pilot test was conducted on a group of 30 undergraduate students from Borno State University. Cronbach Alpha analysis was used to estimate the internal consistency of the instrument and reliability coefficient value of 0.79 was realized which was considered reliable. The administrations of the questionnaire were carried out by the researchers. A total of 400 copies of the questionnaire were distributed and collected on the spot to ensure 100% return rate. However, only 378 were used for data analysis as 22 copies were wrongly filled rendering them invalid. Data collected were analyzed using mean and standard deviation to determine the research question while the inferential statistics of independent t-test was also used to test the stated hypothesis at 0.05 level of significance.

Results

Research Question One: What is the perceived influence of digital technology on the undergraduate students' academics?

In respect to research question one; results are presented in Table 1 to show the influence of digital technology on undergraduate students' academics.



Table 1: Descriptive Analysis of Responses on Perceived Influence of Digital Technology on Undergraduate Students' Academic Performance in University of Maiduguri

Items	\bar{X}	SD
My academics will greatly improve if I stop using my smart phone/computer.	2.93	0.631
I use my smart phone/computer for assignments/research.	3.01	0.114
I always have problems with concentration in class because of the need to use my smart phone/computer.	2.76	0.633
I engage in academic forums/discussions using my smart phone/computer and this has improved my academics.	1.86	0.862
I spend more time on my smart phone/computer than I do studying	2.82	0.636
My smart phone/computer now serves as my library.	1.96	0.850
My smart phone/computer is a big distraction to my academics.	2.74	0.613
The use of smart phone/computer has not in any way improved my reading and writing skills	2.64	0.481
I always feel sleepy during lectures because of the long hours spent on my smart phone/computer	2.80	0.624
I use my smart phone/computer more for chatting, downloading movies and music not for academic purposes.	2.87	0.651
The use of smart phone/computer has improved my ability to think critically and engage meaningfully in my academics.	1.78	0.877
Digital technologies use helps me share learning experiences with other students	2.61	0.573
My smart phone/computer encourages me to engage in inappropriate actions which negatively affect my academics.	2.22	0.829
My smart phone/computer prevents me from engaging in class participation	1.86	0.901
I am really struggling with balancing the use of my smart phone/computer for pleasure and proper academic engagement.	3.01	0.641
Grand Mean	2.07	0.66

$\bar{X}=2.5$

Table 1 presents undergraduate students' perceived influence of digital technology on their academics. Results reveal that though majority of students use their smart phones/computers for assignments/research, they are struggling with balancing the use of their smart phones/computers for pleasure and proper academic engagement. Majority of students also agree that their academics will greatly improve if they stop using their smart phones/computers, they use their smart phones/computers more for chatting, downloading movies and music not for academic purposes, spend more time on their smart phones/computers than they do

studying and always feel sleepy during lectures because of the long hours spent on their smart phones/computers. Majority of the responses had mean above 2.5($\bar{X}>2.5$). Table 1 further shows that the grand mean score is 31.10 falls within the ranking of 31 to 60 which signifies that there is negative influence of digital technology on undergraduate students' academics.

Ho₁ Digital technology would not significantly influence male and female undergraduate students' academics.

The result for testing hypothesis one is presented in Table 2.

Table 2: Influence of Digital Technology on Male and Female Undergraduate Students' Academics

Group	N	Mean	SD	df	t	p
Male	196	30.94	5.434	376	-0.548	0.001
Female	182	31.27	6.460			

(p<0.05)

Results in Table 3 show that digital technology had significant influence ($p < 0.05$) on male and female undergraduate students' academics. Therefore, null hypothesis which stated that digital technology would not significantly influence male and female undergraduate students' academics is not accepted.

Discussion

Results of the study reveal that majority of students use their smart phones/computers for assignments/research however, they are struggling with balancing the use of their smart phones/computers for pleasure and proper academic engagement. Majority of students also agree that their academics will greatly improve if they stop using their smart phones/computers; they use their smart phones/computers more for chatting, downloading movies and music not for academic purposes, spend more time on their smart phones/computers than they do studying and always feel sleepy during lectures because of the long hours spent on their smart phones/computers. This agrees with findings of Gök (2015) who found that digital devices and SNS had negative impact on students' knowledge and learning due to distractions from computers and smartphones through time spent posting on Facebook or Twitter, listening to music, watching movies, playing games, checking e-mails and surfing on the internet than academic courses.

It suffices to state that Gaille (2018) warned that digital technology could interfere with sleep patterns as the individuals disengage with their natural circadian rhythm. This inability of undergraduate students to balance the use of digital technology for pleasure and academic engagement is a distraction that could have enormous influence on students' study hours and academics in general. It is vital to note that the findings of this study indicated that majority of undergraduate students use their smart phones/computers for assignments/research points to the positive aspects of digital technology among students. Wekerle et al. (2020) as well as Reese (2021) agree that digital technology can have positive effects on students' learning in higher education.

This study further established that digital technology had significant influence on male and female undergraduate students'



academics with females being the most influenced. This is not in agreement with the finding of Gok (2015) who found that there was no significant difference between genders in the use of digital technology among students. While this study established negative influence of digital technology on undergraduate students' academics, it is vital to note that the advantages of digital technology outweighs the disadvantages when utilized appropriately. Hence, Olaore (2014) emphasized that the attitude of tertiary students to the use of digital technology has a large impact on its resultant effect on their academics. With computer-based instruction now globally prevailing throughout the learning environments, streamlining minds and establishing new roles, students must face this reality and tap into the positive climate of digital technology. Since the spur for the 21st century learners is proficiency in use of digital technology, students ought to utilize digital technologies positively to promote innovation, increase productivity and enrich their quality of lives.

Conclusion

Based on findings, this study concluded that there is negative influence of digital technology on undergraduate students' academics as most of them struggle with balancing the use of their smart phones/computers for pleasure and proper academic engagement. This concludes that digital technology distracts majority of undergraduate students from their academics. Furthermore, digital technology had significant influence on male and female undergraduate students' academics. with females being the most influenced.

Recommendations

The study therefore recommends the following:

1. Management/lecturers of tertiary institutions should constantly re-educate students on the negative influence of digital technology on their academics.
2. Time management should be emphasized among undergraduate students to prevent distractions orchestrated by the inappropriate use of digital technology. Time hiatus for essential activity should be recognized and organized by students.



3. Management of tertiary institutions should organize workshops and trainings for students on the academic relevance of digital technology; their minds should be steered towards academic research and harnessing the advantages therein.

References

Alhumaid, K. (2019). Four Ways Technology Has Negatively Changed Education. *Journal of Educational and Social Research*, 9 (4). Doi: 10.2478/jesr-2019-0049

D'Angelo, C. (2018). The impact of technology: student engagement and success. The impacts of technology integration. Retrieved from <https://techandcurriculum.pressbooks.com>

Gaille, B. (2018). 23 Advantages and Disadvantages of Technology in Education. Retrieved from <https://brandongaille.com>

Gök, T. (2015). The positive and negative effects of digital technologies on students' learning. International Conference on Education in Mathematics, Science & Technology. *The Eurasia Proceedings of Educational & Social Sciences (EPESS)*, 2, 173-177.

Hairon, S. & Chai, C. (2017). The learning revolution: From pedagogues to designers of learning. *Learning: Research and Practice*, 3(3), 79-84.

Purcell, K., Buchanan, J. & Friedrich, L. (2013). The impact of digital tools on student writing and how writing is taught in schools: Pew Research Center. Retrieved from <https://www.pewinternet.org>

Reese, A. L. (2021). The effects of technology on student engagement and

academic success. Retrieved from <https://nwcommons.nwciowa.edu>

Salas, G., & Alexander, J. S. (2008). Technology for institutional enrollment, communication, and student success. In Junco, R., & Timm, D. M. (Eds.), Using emerging technologies to enhance student engagement. New directions for student services, Number 124. 103-116. San Francisco, CA: Jossey-Bass.

Schindler, L. A., Burkholder, G. J., Morad, O. A., & Marsh, C. (2017). Computer-based technology and student engagement: a critical review of the literature. *International Journal of Educational Technology in Higher Education*, 14(1), 25.

Sun, S., Lee, P., Lee, A., & Law, R. (2016). Perception of attributes and readiness for educational technology: Hospitality management students' perspectives. *Journal of Hospitality & Tourism Education*, 28(3), 142-154.

UNICEF Report (2017). The State of the World's Children 2017: Children in a Digital World. Retrieved from <https://www.unicef.org>

Olaore, I.B. (2014). The Impacts (Positive and Negative) of ICT on Education in Nigeria. *Developing Country Studies*, 4 (23). Retrieved from www.iiste.org

Wekerle, C., Daumiller, M. & Kollar, I. (2020). Using digital technology to promote higher education learning: The importance of different learning activities and their relations to learning outcomes. *Journal of Research on Technology in Education*, DOI: 10.1080/15391523.2020.1799455.