

Impacts Of ICT On Ubiquitous Use Of Chatbots Among Students in Public Higher Educational Institutions in Nigeria

Christian Nwakanma PhD¹ & Ekeh, Camillus Ugochukwu PhD²

¹Department of Business, Education Faculty of Education, Madonna University Nigeria, Okija Campus, Anambra State, Nigeria

²Department of social Science education, Faculty of Education, Imo State University Owerri, Nigeria

Received: 23 July 2025, Accepted: 25 July 2025, Published with Peer Reviewed on line: 31 July 2025

Abstract

This paper of ICT on ubiquitous use of chatbots in public higher educational institutions in Nigeria. University of Port Harcourt River State is among the public tertiary education institutions in Nigeria. Population of this study is 11,000 which comprised 5,000 males and 6,000 female students from University of Port Harcourt River State. Stratified random sampling technique was used to select 35 male respondents in three departments from the faculty of education. On the other hand, 40 female students were selected from three departments in the faculty of management sciences, all from university of Port Harcourt river State. This gave a sample size of 225. Descriptive survey research design was used for this study. Two research questions guided this study. Instrument used for data collection was researcher developed questionnaire "titled, impacts of ICT on ubiquitous use of chatbots in public higher educational institutions in Nigeria" was used, with four rating scale of strongly agree, agree, dis agree and strongly disagree. The instrument was validated by two specialists from Imo state University Owerri. Cronbach alpha statistics was used to determine the reliability coefficient of this study at 0.78 and 0.97, which shows that the instrument is reliable to be used for this study. Mean scores were used to analyze the data. The finding from this study reveals that there are varied challenges on use of ICT in public higher education institutions in Nigeria. The challenges include: Inadequate funding for provision of ICT facilities by federal government frequent power outage, inability of some students to embrace change with ICT among others. It was recommended for this study that government should provide adequate funding to public higher education institutions in Nigeria.

Keywords: *Modern Age Students, Uses of ICT in Hybrid learning, Modern World with Artificial Intelligence, Meaning of Chatbots, Impacts of Chatbots in Teaching and Learning.*

Introduction

Education is an instrument for achieving economic, technological, physiological, social and political development. Education and technology are instruments used for the development of a country. Education is receiving great attention in the whole world because of its economic, social, political and technological benefits people derive from it (Okoro, 2001). Education is imperative for both children and adults because it brings change to human behavior. In this 21st century, education is the eye and the road to see the gains of the future (Anyagwu, 2021). Education is pivotal for enhancing human creativity and innovation. It is a fulcrum for development of human intellect in skills and good thinking. Benefits derived from education have made education a powerful tool that should be incorporated with technology for knowledge and skill development of people in different countries of the world (Ema, 2014).

Modern Age Students

Use of ICT has been the norm every adult of school ages have resolved to practice or imbibed with. In this new age, uses of ICT tools and devices have surpassed traditional teaching method thus, facilitating the use of ICT in different classroom modes. ICT has unlocked the door for education, health and commerce (Wegerif & Major 2019). In this new age, students are active learners, collaborative participants in classroom teaching and learning transactions.

Uses of ICT in Hybrid learning

Today, both face to face virtual forms of classrooms are incorporated to ease effective delivery. On the other hand, AI provide adaptive learning platforms. For example, students obtain information that helps them in their research work with use of AI tools. AI help lecturers to provide tailored teaching and learning to students. Students make use of AI to interact among themselves (Williams 2015). ICT have increasingly become significant tools for students learning in different classroom modes. ICT as a learning tool, is configured to provide tailored teaching and learning, transmission of academic messages and receipt of instant feed backs on quiz and assignment (Morison, Lowther 2010, Lever – Duffy, & Mc Donald, 2011). In this 21st century, there is a paradigm shift from the old classroom to modern classroom. ICT tools are the gates to knowledge, students can make use of ICT to achieve positive results in their learning (Srinivas, 2014). Students have accorded significant importance on use of ICT tools in varied learning forms. Interpretation and clarification of concepts are made possible with ICTI tools. Long hurdles of searching textbooks to get solutions to research work are made possible with ICT and internet services. Instant solutions to student's research work carried out use of ICT tools

Modern World with Artificial Intelligence

The world is a global village. Gone are the days when students depend on their teachers and lecturers as the only repositories' of knowledge. In this era, the vogue is on how to use artificial intelligence to establish effective learning (Barret e tal, 2019). Many students have identified the efficacy of AI tools in achieving rewarding learning experiences. Chatbots have been so efficacious in analysis of concepts in the classroom, student's research work, personalized and collaborative learning needs. (Kowalski, 2013, Abbas, 2014, fryer, 2017 & Roos, 2018). Lecturers sends quiz to students with AI tools, students after solving the assignments, returns the assignment to students via students AI platforms. Benefits derived from use of AI teaching and learning, enables teaching and learning to be engaging and rewarding.

Meaning of Chatbots

There are various forms of AI tools. In this world of high quest for knowledge and skill acquisition, chatbots have been very unique for students use in their learning. Chatbots are used for language translation or interpretation. Chatbots are among the AI tools, they are used for writing, recording and storing materials collected from other media. Lecturers derive unquantifiable benefits from using chatbots to extract materials or concepts required for students learning. Lecturers ensure that those materials extracted are synthesized or refined for effective teaching and learning outcome. Chatbots provides rewarding learning experiences in personalized and collaborative learning modes. Digital media such as lap tops, desktops, and handsets, can be configured to enable students have access to AI learning tools (Abdel, Waki, Musharak 2019 & Holmes e tal 2019).

Impacts of Chatbots in Teaching and Learning

Chat bots have been impactful in helping students develop deep and creative thinking thus, immense benefits are derived from learning with chatbots (Change e tal, 2022). Students of this modern age are born in computer age. ICT is revolutionizing the world. ICT gave birth to use of AI tools. Students make use of ICT tools to write, read, draw store, and retrieve data. Students of this new age speak the language of ICT. Students, also, practice writing skills with ICT tools, without hitches (Patel, 2023). Change is inevitable, both students and people in all works of life have embraced the change with use of technology in health, commerce, industry and education. Majority of students in different levels of education are consistently making use of ICT which mediate artificial intelligent AI, to ease their learning (Change, 2022). In this new age, students have developed abilities on use of different media such as audio, visual, audiovisual, texts in their learning. Students of this new generation are explorers, experientialists, evaluators, analysts, designers and improvisers. They can confidently subscribe for the best AI tools to ease their learning. Chatbots as AI tools, assists learners in both face to face, mobile, flipped and hybrid classroom (Issa, 2020). Chatbots helps students to adapt to any teaching and learning environment, be it at home, schools or any other comfort zone of students where there are internet broad band and steady use of electricity (Monova- Zheleva, 2005 & essel e tal 2022). Students can innovate, share, transmit, store, and trade data with many information dissemination software's, and engage in digital education dialogue (Rouse, 2015 Ventura e tal 2018 & Holmes e tal 2019). ICT comprised all media incorporated to transmit audio, video, data and multimedia information for students and other interested users (Perron, Taylor, Glass & Margerum- leye 2010).

Unprecedented demands for ICT have uplifted the use of AI tools. ICT and its AI mediated tools have progressively aided learning thus, subordinating the use of moribund and antiquated machines that have not endeared 80% academic needs in the past decades. The world is now a global village and AI is taking the lead. In industries, AI has been very beneficial in writing and correcting business letters, aiding accurate records of business transactions, generating accurate business data, detection of crimes and aiding forensic audit analysis (Okeke, 2005). In health organizations, they are machines for detecting fractured bones, nerves and intestines. In pharmaceutical industries, AI machines are used for drug synthesis and refining. In social and events centers, images, relics, portraits, motion pictures are designed with AI tools. AI tools, adorns our environment thus, providing burbles of happiness to creative works. Enough cannot be said of AI. In Architecture, AI tools are pencils for designing buildings. In academic writings, AI tools provide eruditions to academic scholars on well written articles and lecture materials.

Students engage into explorative and experiential learning with AI tools (Cisco 2008). AI tools highlights areas of learning students have done very well and areas they did not do well thus, helping students to be aware of different areas of their learning that required more improvements. Students can confidently write their quiz with chartbots. Chatbot enables students to engage in practical learning. Chatbots are academic software s that enables students to get feedbacks from their academic work. Student solves their quiz and examinations at the comfort of their homes with chtabots. Chatbots provides good teaching and learning assistance to lecturers and students. In this 21st century, the hurdles of traveling far distances to learning institutions have reduced, today; students can receive instant messages for their academics and send back solved messages to their students learning platforms constantly received by their lecturers for validations. However, course contents or course outlines are made available to students on their Chatbots. The importance of Chabots cannot be over emphasized. Chatbots have aided students to plan and actualize their personal and group academics

goals. Students acquire information, on all activities of their educational institutions and stay on tracks without deviating from the needs of their studies. Bad hand writing or bad writing skills are corrected with the use of chatbots. Ways to construct good Grammar, syntax are made possible with the use of AI tools. Solutions to issues under debate are provided with AI tools. Students of this new age, obtain rewarding experiences in the use of chatbots to translate foreign languages to their understanding. The world is now, a global village, learning that are multifaceted and takes longer times or period to learn are made easy with the use of chatbots. Chatbots eases effective communication, thus, fostering collaborative learning that are ideal for students engagement.

Statement of the Problem

ICT has offered varied learning assistance to students in varied forms. Many students cannot do without ICT because; it has opened very significant roads maps for students learning. ICT has exhumed the efficacy of chatbots on effective students learning. Despite the numerous benefits derived from the use of ICT. There are challenges confronting the use of ICT in public higher education institutions in Nigeria. Those Changes include: inadequate technologists to effect repairs on faulty ICT facilities, Inadequate funding for installation of ICT facilities by federal and state government in Nigeria, frequent power outage, inadequate policy on use of ICT in public universities, lack of internet broad band in some public higher education institutions, inability of some students and lecturers to embrace change with the use of technological equipment. Vast array of ICT challenges affects the use of chatbots because, chatbots proceeds from ICT.

Methods

This paper is on impacts of ICT on Ubiquitous use of chatbots as AI tool in public higher educational institutions in Nigeria. University of Port Harcourt River State is among the public tertiary education institutions in Nigeria. Population of this study is 11,000 which comprised 5,000 males and 6,000 female students from University of Port Harcourt River State. Stratified random sampling technique was used to select 35 male respondents in three departments from the faculty of education. On the other hand, 40 female students were selected from three departments in the faculty of management sciences, all from university of Port Harcourt river State. This gave a sample size of 225. Descriptive survey research design was used for this study. Two research questions guided this study. Instrument used for data collection was researcher developed questionnaire "titled, on impacts of ICT on Ubiquitous use of chatbots as AI tool in public higher educational institutions in Nigeria" was used, with four rating scale of strongly agree, agree, dis agree and strongly disagree. The instrument was validated by two specialists from Imo state University Owerri. Cronbach alpha statistics was used to determine the reliability coefficient of this study at 0.78 and 0.97, which shows that the instrument is reliable to be used for this study. Mean scores were used to analyze the data.

Results

Research Question One:

What are the benefits students derived from use of Chatbots in 21st in public higher education institutions in Nigeria?

Table 1: Shows the benefits students derive from use of Chatbots in 21 in public higher education institutions in Nigeria.

S/NO	Mean	Remarks
1. Chatbots provide student with step by step solutions on learning concepts.	3.10	Agree
2. Students use chatbots to ask Questions and receive immediate feedbacks that addressed their research problems.	3.00	Agree
3. Chatbots helps students to adapt to personalized learning styles, making learning contents available to students.	3.10	Agree
4. Chatbots serves as virtual tutors to students, offering enough guidance to students learning on various courses.	2.90	Agree
5. Students use chatbots to solve Their assignment.	3.30	Agree
6. Students receive feedbacks on grades given by their lecturers on their assignment.	3.20	Agree
7. Instructions on how students Should improve in their learning are provided in chatbots.	4.00	Agree
8. Chatbots provide tailored Learning concepts to students.	3.30	Agree
9. Students can study with the use of chat boards at the comfort of their homes.	2.70	Agree
10. Chatbots offer immediate assistance to students on students various learning styles.	3.40	Agree

Decision

The means in table 1: above were very higher to the decision rule of 2.5. This proved that the benefits students derive from use of chatbots is significant.

Research Question two:

What are challenges of ICT in public higher education institutions in Nigeria?

S/NO	Respondents	Mean	Remarks
1.	Power Outage	3.20	Agree
2.	Cost of ICT Resources	3.10	Agree
3.	Internet fluctuations	3.30	Agree
4.	Inadequate provision of ICT tools in public universities.	2.60	Agree
5.	Inadequate funding in public universities.	2.70	Agree
6.	Insufficient digital skills among educators.	3.10	Agree
7.	Lack of clear policy On use of ICT in public Universities.	3.00	Agree
8.	Digital skill gap among lecturers and students	3.30	Agree
9.	Resistance to use of ICT facilities among students.	3.20	Agree
10.	Lack of qualified personnel to effect repairs on ICT facilities.	3.50	Agree

Decision

The means in table 1: above were very higher to the decision rule of 2.5. This proved that the benefits students derive from use of chatbots is significant.

Recommendations

1. Nigerian government should provide adequate ICT facilities in public higher education institutions in Nigeria. This would encourage students to have access to more AI tools in their learning.
2. Nigerian government should provide un-interrupted electricity in public higher education institutions in Nigeria. This would reduce resistance some student develop with the use of ICT to enrich themselves with AI tools.

Discussion of Findings

Chatbots have enriched students learning in both personalized and collaborative learning forms. The finding from this study revealed that Chatbots assists learners in both face to face, mobile, flipped and hybrid classrooms. Media such as lap tops hand sets and desk tops assist learners to have enriched benefits with use of chatbots as AI tools. On that note, (Abdel, Waki, Musharak 2019 & Holmes e tal 2019) identified that digital media such as lap tops, desktops, and handsets, can be configured to provide AI tools. Chatbots are useful to any level of students be it students in primary, secondary and tertiary education (Change, 2022) averred that majority of students in different levels of education are consistently making use of ICT which mediate artificial intelligent AI, to ease their learning. Chatbots gather outstanding remarks in providing assistance in students learning especially during preparations for semester examinations and graduation post fields. (Kowalski, 2013, Abbas, 2014, fryer, 2017 & Roos, 2018) maintained that chatbots have been so efficacious in analysis of concepts taught in the classroom, student's research work, personalized and collaborative learning needs. Students acquires varied assistance from the use of chatbots in different spheres of learning (Rouse, 2015, Ventura, 2018 & Holmes e tal, 2019). Opined that students can share, transmit, store, trade data with many information dissemination software's, and engage in digital education dialogue with chatbots.

1. Government should provide more ICT and internet facilities in public higher education institutions in Nigeria. This would enable more students to have access to AI tools in public universities in Nigeria.
2. Steady power supply should be installed in public universities in Nigeria. This would enable students to be ICT compliant to compete favourably with their mates in the world of work.

Conclusion

Chatbot has provided enormous rewarding experiences to students learning. Chatbot provide immediate solutions to students learning. Answers that depict solutions to learning are made explicit with Chatbot. AI tools helps students to stay engaged in their learning. Chabot compels slow learners to develop fast learning skills. Both slow learners and fast learners have engaged themselves with AI without hitches. Chatbots have been so efficacious in analysis of concepts taught in the classroom, student's research work, personalized and collaborative learning needs. (Kowalski, 2013, Abbas, 2014, fryer, 2017 & Roos, 2018).

References-

Abbasi, S & Kazi, H. (2014). Measuring the Effectiveness of Learning Chatbot Systes on Student's Learning Outcomes and memory Retention. Asian Journal of Applied Science and Enginneering, 3, 57-66. Chatbots helps students to adapt to any teaching and learning environment, be it at home, schools or any other comfort zone of students where there are internet broad band and steady use of electricity (Monova- Zheleva, 2005 & essel e tal 2022).

- Al-Wazzen, M.S. (2019) Can Digital Mind Mapping with Collaborative Enhanced Learning in Saudi Primary Schools? [Doctoral Dissertation, Durham University]. Durham e-thesis. <http://etheses.dur.ac.uk/12975/>.
- Anyanwu, R.O. (2021). Educational Management and Supervision in a digital World: Emerging Perspectives. Bon Publications .Owerri.
- Barret, M. Branson, L Carter, S. Deleon, F. Ellis, J. Gundiache, C. & Lee, D. (2019). Using artificial Intelligence to enhance Educational Opportunities and Students Services in Higher Education. Inquiry: The Journal of the Virginia Community Colleges, 22(1), article 11. <http://commons.vccs.edu/inquiry/vol22/iss/11>.
- Change, C.Y., Kuo, S.Y., & Hwang, G.H. (2022). Chatbot- facilitated Nursing Education: Incorporating a Knowledge- based Chatbot System into a Nursing training Program. Educational Technology and Society, 25(1), 15-27. <http://www.jstor.org/stable/48647027>.
- Cisco Systems, Inc. (2008). Transforming to 21st Century Pedagogy. Retrieved 23th December, 2014 from <http://www.cisco.com/web/about/citizenship/cisco-economic/docs/pedagogy-EAP-RI.pdf>.
- Emah, I.M. (2014). Strategies for Curriculum Content Development in U.M.O. Iwofe (Ed). Curriculum teaching in Nigeria. Lagos Foremost Education Services Ltd.
- Fryer, L.K. Ainley, M. Thompson, A. Gibson, A.A. & Sherlock, Z. (2017). Stimulating and Sustaining Interest in a Language Course: An Experiment Comparison of Chatbot and Human Task Partners. Computers in human Behavior, 75, 461-468. <http://doi.org/10.1016/j.chb.2017.05.045>.
- Holmes, W. Bialik, M & Fadel, C. (2019). Artificial Intelligence in education: Promises and Implications for teaching and Learning. The Center for Curriculum Redesign. <https://bit.ly/48PVLdD>.
- Monova- Zheleva, M. (2005). Adaptive Learning in Web-Based Education environments. Cybernetics and Information Technologies, 5(1), 44-55. https://cit.iict.bas.bg/CIT_05/v5-1/44-55.pdf.
- Roos, S. (2018). Chatbots in Education. A passing Trend or a Valuable Pedagogical Tool? [Master's Thesis, Uppsala University].
- Wegerif, R. & Major, L. (2019). Buber, Educational Technology and the Expansion of Dialogic Space. AI and Society, 34, 109-119. <https://doi.org/10.1007/s00146-018-0828-6>.
- Lever-Duffy, J. & Staker, H. (2011). Teaching and learning with technology (4th ed). Boston Pearson.
- Morrison, G.R. & Lowther, D.L. (2010). Integrating Computer Technology into the Classroom: Skills for the 21st Century (4th ed). Boston: Pearson.
- Srinivas, H. (2014). Collaborative Learning: 44 benefit of Collaborative Learning. Retrieved 27th December, 2014 from <http://www.gdrc.org/kmgmt/c-learn/44.html>.
- Rouse, M. (2015). Information and Communication technology (ICT). Retrieved from December 7, 2025, <http://www.thejournal.com/magazine/vault/articleprintversion.cfm?aid4344>.
- Perron, B.E. Taylor, H.E., Glass, J.E & Margerum- Leye, J. (2010). Information and communication Technologies in Social Work. Advances in Social Work. International Journal of Science Research and Reality. 11(1) 67-81.
- Okoro, C.O. (2001). The relevance of Curriculum Development to National Building in Nigeria. Journal of Curriculum and Instruction. National Association of Curriculum Theorists (UNACT).

Okoroeke, L.C. (2000). Principles and Practice of Auditing and Investigations. A manual for Professionals and Non –Professionals. Lima Publishers, Lagos State.

Williams, C. & Adesope, Y.R. (2015). Explorative of ICT software in Modern Classroom International Journal of Academic Research and Reflection, 4(1), 15-22. www.idpublication.org.