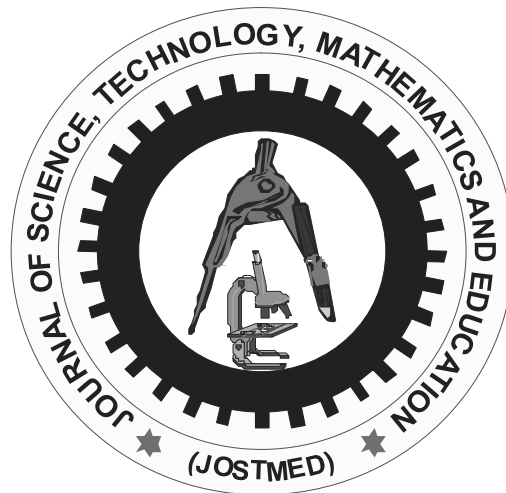


**JOURNAL OF SCIENCE, TECHNOLOGY,
MATHEMATICS AND EDUCATION
(JOSTMED)**



ISSN: 0748 – 4710

VOLUME 13(3), SEPTEMBER, 2017

WELCOME TO JOSTMED

Welcome to the Journal of Science, Technology, Mathematics and Education (JOSTMED). The JOSTMED is a scholarly based journal published thrice in a year by the Department of Science Education, School of Science and Science Education, Federal University of Technology, Minna, Nigeria, since September 1998. The scope of the Journal includes the research, development, and practice in all areas of Science, Technology, Mathematics and Education.

INSTRUCTIONS TO CONTRIBUTORS

1. General Guidelines

(i) **Types of Manuscripts:** The Editorial Board of the Journal of Science, Technology, Mathematics and Education accepts only scholarly and original articles that meet its aim and scope. Contributions must be original, therefore, authors is/are to guarantee that their article is original and not currently being considered for publication elsewhere.

(ii) **Language:** The JOSTMED is published in English Language.

(iii) **Length:** Usually full-length article, survey or report should be between 3,000 - 5,000 words (12 – 15 pages).

(iv) **Abstract and Keywords:** Each article should be summarized in about 150 -200 words, serving as a brief description of the content of the article. In addition, following the abstract, supply 4 - 5 keywords/phrases that characterize the content of the paper and which can be used for indexing purposes.

(v) **Manuscript:** Manuscripts, including the abstract and references, should be typed double-spaced on A4 paper set-up using Times New Roman, 12 font size.

(vi) **Review:** Each submission will be subjected to blind peer-review by at least two experts in the fields of the articles. Before the publication of accepted article, corresponding authors will receive a PDF version of their manuscript for final proofing. It should, however, be emphasized that changes in content (new or additional results, corrected values, changes in article title, etc) are not permitted without the approval of the Managing Editor.

2. Copyright

Only original papers will be accepted and processed. Paper accepted will be subjected to viper anti-plagiarize detector software. In addition, no compensation will be given in respect of published papers. However, authors reserve the right to use their own materials for purely educational and research purposes.

3. Format of Submitted Manuscripts

All manuscripts, written in good English, should be submitted electronically as an e-mail attachment (in Microsoft Word format not scanned copy) to the journal e-mail: jostmed@futminna.edu.ng, jostmedscience@yahoo.com or managing editor's e-mail: gambarii@yahoo.com, gambari@futminna.edu.ng.

In a rear occasion, when submitting manuscript in a paper version three copies should be submitted in double line spacing with wide margins, and not more than 12 pages with illustrations inserted. Extra page will attract additional amount of N1,000.00/\$7.00 per page. Each article submitted must be accompanied with an assessment fee of three thousand naira (N3,000) only in cash or bank draft in favour of the Managing Editor (JOSTMED). Submission of manuscript is accepted throughout the year.

The beginning of the manuscript must bear the title of the paper and the full names of authors and their affiliations for correspondence (including e-mail and telephone number). Where there are two or more authors include the addresses for correspondence (e-mail and postal addresses) for the contact author.

Once the article is accepted for publication, the final version should be submitted online. Where that is not possible, the manuscript must be provided, accompanied by a Recordable CD of the same version labelled with: author name(s); titles of article and file name. The author must ensure that the final submission is complete, grammatically correct and without spelling or typographical errors. In preparing the disk, please use Microsoft Word. The sum of Fifteen Thousand (N15,000) naira only (£50.00 or \$100 US Dollar) should be paid to journal account. The online version of the published articles are available at www.futminna.edu.ng and can be accessed through the Internet free of charge.

4. Organization

The background and purpose of the manuscript should be given first, followed by details of methods, materials, procedures and equipment used (where applicable). Findings, discussion, conclusions and recommendations should follow in that order. Appendices are not encouraged, but may be countenanced if considered necessary for the manuscript content to be understood. Specifically, author is/are advised to consult the current APA Manual for the details they may need.

5. Figures and Tables

Figures, charts and diagrams should be kept to a minimum, they must be numbered consecutively with roman numerals and a brief title. When submitting electronically, figures should be prepared separately, numbered consecutively and submitted in one of JPEG File interchange (jpg), CompuServe GIF (gif), and PC Paintbrush (pcx). Images should not exceed width of 450 pixels.

6. References

The author should ensure that the references given are complete. References to personal letters, papers presented at meetings and other unpublished material may be included. Where such materials may help in the evaluation of the paper, copies should be made available to the Managing - Editor. Papers that are part of a series should include a citation of the previous papers, and explanatory materials may be appended to the manuscript to avoid footnotes. Citation of an author's work in the text should follow the author / date method of citation; the surname of the author (s) and year of publication should appear in text. Generally, the format for citations in the Manuscript for references is that of the latest edition of the American Psychological Association (APA) format. At the end of the article, a reference list in alphabetical order must be given.

7. Disclaimer

The views and styles expressed in the articles in this publication are those of the individual authors and are not necessarily shared by the reviewers, the editors, the editorial consulting board, the Department of Science Education, or the Federal University of Technology, Minna.

Dr. Gambari, A. I.

Associate Professor of Educational Technology

The Managing Editor, (JOSTMED),

Department of Science Education,

Federal University of Technology,

P. M. B. 65, Minna, Niger State, Nigeria.

E-mail: gambarii@yahoo.com; gambarisiaka@gmail.com

gambari@futminna.edu.ng ; gambari@codel.futminna.edu.ng

Website: www.gambariamosaisiaka.com.ng

Mobile Phone: +234-816-680-7534; +234-803-689-7955; +234-805-558-6716

EDITORIAL BOARD

Editor-in-Chief	-	Prof. (Mrs.) V. I. Ezenwa
Managing Editor	-	Asso. Prof. A. I. Gambari
Assistant Managing Editor	-	Mr. A. A. Yaki
Associate Editor	-	Dr. T. O. Alabi
Associate Editor	-	Mr. U. S. B. Idris
Associate Editor	-	Dr. O. C. Falode
Account Editor	-	Dr. (Mrs.) R. G. Wodu
Business Editor	-	Dr. (Mrs). A. Umeh

EDITORIAL ADVISERS

NAME	SUBJECT	ADDRESS
Prof. (Mrs.) V. I. Ezenwa	Chemistry Education	F.U.T. Minna
Prof. Afolabi Ayo Samuel	Civil & Chemical Engineering,	University of South Africa
Prof. M. O. Yusuf	Educational Technology	University of Ilorin
Prof. (Mrs.) R. Uyanga	Science Education	University of Uyo
Prof. P. A. O. Okebukola	Biology	L. A. S. U., Lagos
Prof. I. O. Inekwe	Mathematics Education	A.B.U. Zaria
Prof. Sanjay Mistra	Computer Cyber Security,	F.U.T. Minna
Prof. C. Ugodulunwa	Test and Measurement	UniJos
Prof. (Mrs.) U.N.V. Agwagah	Science Education	University of Nigeria Nsukka
Prof. J. M. Baba	Geography	F. U. T., Minna

SUSCRIPTION RATES

Nigeria Rate (Personal)	₦1,000.00
Rate (Institutions)	₦2,000.00
Other Countries Rate (Personal)	\$25.00 / £15.00
Rate (Institutions)	\$35.00 / £22.00

All Cheques should be made payable to:

The Managing Editor, JOSTMED, Department of Science Education,
Federal University of Technology, Minna, Nigeria.
Subscription must be pre-paid and must include 10% handling charges

Copyright ©

Journal of Science, Technology, Mathematics and Education
All rights reserved

ISSN 0748-4710

CONTRIBUTORS TO THE ISSUE

- 1. ONOJA M. A.¹; EWA, I. O. B.²; OLADIPO, M. O. A.²; JONAH, S. A.²; & NASIRU, R.¹**
¹Department of Physics, Ahmadu Bello University, Zaria, Nigeria
²Centre for Energy Research and Training, Ahmadu Bello University, Zaria, Nigeria
Email: Gtob2014@gmail.com **Phone No:** +234-805-073-4928
- 2. ADABARA, N. U.¹; KUTA, F. A.¹; BALA, J. D.¹; ADELERE, I. A.; ADEDEJI, A. S.¹; ZAKARI, H.²; & TIJANI, R.¹**
¹Department of Microbiology,
Federal University of Technology, Minna, Niger State, Nigeria.
²Department of Microbiology,
University of Jos, Jos, Plateau State, Nigeria.
E-mail: nasiru.adabara@futminna.edu.ng **Phone No:** +234-806-909-2576
- 3. IDOWU, F. C.; & IJAH, U. J. J.**
Department of Microbiology,
Federal University of Technology Minna, Nigeria
E-Mail: Folabambi@gmail.com **Phone No:** +234-703-706-3073
- 4. UDIM SUNDAY SAMPSON¹ & OJOYE, S.²**
Department of Geography,
Federal University of Technology, Minna, Nigeria
Email: Udimsundaysampson168@yahoo.Com. **Phone No:** +234-803-058-9944
- 5. STELLA AMARACHUKWU ONWUKANJO (PhD) CLN**
Library and Information Technology Department,
Federal University of Technology, Minna, Niger State, Nigeria
Library and Information Technology Department,
Federal University of Technology, Minna, Niger State, Nigeria
E-Mail: stellaradiant@yahoo.com, onekpemaureen@gmail.com
Phone No: +234-802-341-7566, +234-703-926-5995
- 6. AREKEMASE, M. O.¹; LAWAL, A. K.¹; ADAM, A. I.¹; OLABANJI, S. O.¹; OROGU, J. O.²; & AHMED, T.³**
¹University of Ilorin, Faculty of Science,
Department Of Microbiology, P.M.B 1515, Ilorin, Kwara State, Nigeria
²Delta State Polytechnic, School of Science and Technology,
Department of Science Laboratory Technology, Ozoro, Delta State, Nigeria.
³Department of Laboratory Science Laboratory Technology,
Kwara State Polytechnic, Ilorin, Nigeria
E-Mail: Arekemase.om@gmail.com,
Phone No: + 234-803-0420-658, +234-706-324-1408
- 7. AYANDA, I. F.; & SALAWU, O. L.**
Department of Agricultural Economics and Extension Services,
College of Agriculture, Kwara State University, Malete. Nigeria
Email: Latifaht22@yahoo.com, **Phone No:** +234-806-585-0886

- 8. MALIK, A. A.; KUDU, Y. S.; IBRAHIM, M. J.; GARBA, P. C.; & KOMO, T. S.**
Department of Animal Production,
Federal University of Technology, Minna, Niger State, Nigeria
E-Mail: delemalik@gmail.com **Phone No:** +234-803-063-7763
- 9. RAUF, K.; & USAMOT, I. F.**
Department of Mathematics, University of Ilorin, Ilorin, Nigeria.
E-mails: Krauf@Unilorin.edu.ng; usamot.if@Unilorin.edu.ng
Phone No: 234-814-641-6645
- 10. HAKIMI, D.; & BATAGI, S., A.**
Department of Mathematics, Federal University of Technology, Minna, Nigeria
E-Mail: Hakimi_shenfu@yahoo.Com, alhajibatagishehu@yahoo.com
Phone No: +234-803-451-3313
- 11. ADETUTU¹, O. M.; OGUNTOLU², F. A.; & ABDULLAHI³, U.**
^{1,3}Department of Statistics, Federal University of Technology, P. M. B. 065, Minna
² Department of Mathematics, Federal University of Technology, P. M. B. 065 Minna
E-Mail: ola.adetutu@futminna.edu.ng **Phone No:** +234-816-611-9526
- 12. ADEDAPO, A., Ph.D**
Emmanuel Alayande College of Education, Oyo, Oyo State, Nigeria
E-Mail: dapyem09@gmail.com **Phone No:** +234-803-391-0680
- 13. NUHU, M. SANI¹; ALKALI BABAWUYA²; LAWAL SADIQ S³;
ENEBE VINCENT⁴; & IDRIS ABUBAKAR MOHAMMED⁵**
¹Department of Industrial Education, Waziri Umaru, Federal Polytechnic, Birnin Kebbi
^{2&3}Department of Mechatronics Engineering, Federal University of Technology, Minna
⁴Department of Mechanical Engineering,
Modibbo Adama Univeristy of Technology, Yola, Nigeria
⁵Department of Industrial & Technology Education,
Federal University of Technology, Minna, Nigeria
E-mail: babawuya@futminna.edu.ng **Phone No:** +234-703-809-6888
- 14. SUNDAY ADE, ADENIRAN, PhD¹;; ATSUWE BERNARD AONDOFA²; &
EMMANUEL GOBLESS EJIKE³**
^{1,2} Department of Science Education,
Federal University of Agriculture Makurdi, Benue State
³Fruit of Faith Secondary School Makurdi, Benue State, Nigeria
E-mail: ascentade@yahoo.com **Phone No:** +234-803-436-2037
- 15. DR. (MRS.) JIYA ALICE¹; DR. (MRS.) OLORUKOBA, S. B.²; DR. (MRS.)
LAWAL, F. K.³ & PROF. (MRS.) LAKPINI, M. A.⁴**
¹Niger State College of Education, Minna, Niger State
^{2&3}Department of Science Education, Ahmadu Bello University, Zaria, Nigeria
Department of Science Education, Ahmadu Bello University, Zaria, Nigeria
⁴Institute of Education, Ahmadu Bello University, Zaria, Nigeria
Phone No: +234-803-601-8647

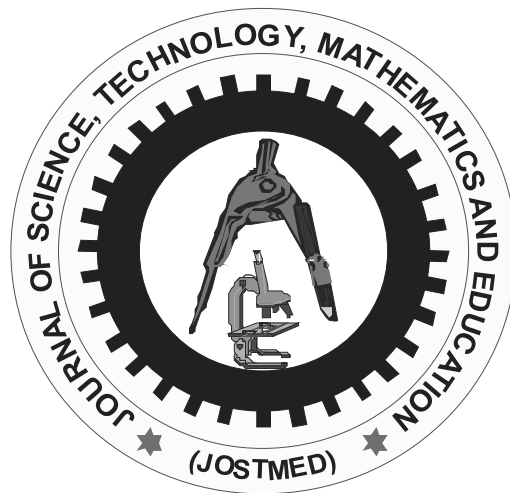
- 16. OGUNLADE, OYERONKE OLUFUNMILOLA, PhD; & ANAZA, ABDULMUMUNI ONUYI, PhD**
¹Department of Educational Technology, University of Ilorin, Ilorin, Nigeria
²Department of Curriculum and Instruction, Federal College of Education, Okene, Nigeria
E-mail: ogunlade.oo@unilorin.edu.ng, anazao74@gmail.com
Phone No: +234-803-245-5690, +234-816-581-8332
- 17. IBRAHIM, ISMAIL KUTA, PhD; TUKURA, SAIDU CHARLSE, PhD; IDRIS, OMENEKE ATIKATU MOHAMMED; AMINA NANA; ALI, FATI; & NNDATSU, ABDULKADIR**
Department of Educational Technology, Federal University of Technology, Minna,
Department of Science Education, Federal University of Technology, Minna, Nigeria
E-mail: ibrahimkuta@futminna.edu.ng **Phone No:** +234-803-583-7865
- 18. Wakili, B. Y, NsoforG.N, Suleiman, Y. M and Emigilati, M A.**
Department of Geography, Federal University of Technology, Minna, Nigeria
Email: balawakili4real@gmail.com **Phone No:** +234-813-158-7607
- 19. SALIU, R. M., GAMBARI, A. I. PHD, UMEH, A. PHD**
Department of Educational Technology, Federal University of Technology, Minna, Nigeria
E-mail: gambari@futminna.edu.ng **Phone No:** +234-803-689-7955
- 20. YUSUF, H. T. (Ph.D)¹, ODUTAYO, A. O.², AKINTOLA, M.², & YUSUF, A. O.¹**
¹Department of Social Sciences Education, Faculty of Education, University of Ilorin, Ilorin, Nigeria
²Department of Educational Foundations and Counseling Psychology, Faculty of Education, Lagos State University, Ojo.
E-mail: o_odutayo@outlook.com **Phone No:** +234-803-395-3944

TABLE OF CONTENTS

1.	Activity Concentrations Of ^{226}Ra , ^{232}Th , And ^{40}K in Soil Around Kaduna Refinery, Nigeria Using Gamma-Ray Spectrometry. Onoja M. A.; Ewa, I. O. B.; Oladipo, M. O. A.; Jonah, S. A.; & Nasiru, R.	1
2.	Prevalence of Malaria among Pregnant Women Attending Antenatal Clinic at the General Hospital, Minna, Nigeria. Adabara, N. U.; Kuta, F. A.; Bala, J.D.; Adelere, I. A.; Adedeji, A. S.; Zakari, H. & Tijani, R.	11
3.	Bioremediation of Diesel Oil Polluted Soil following Amendment with Fungal Consortium. Idowu, F. C. & Ijah, U. J. J.	18
4.	Solid Waste Disposal And Wealth Generation In Parts Of Kaduna Metropolis, Nigeria. Udim Sunday Sampson & Ojoye, S.	30
5.	The Role of Reprographic Services in Enhancing Accessibility of Library Resources to Under Graduate Students in Federal University of Technology Minna Library. Stella Amarachukwu Onwukanjo (PhD) CLN & Onekpe, Maureen Otoluwa....	39
6.	Phytochemicals and Potency of Extracts of (Fagara) and (Black Pepper) on Bacteria Isolated From Cashew Nuts. Arekemase, M. O.; Lawal, A. K.; Adam, A. I.; Olabanji, S. O.; Orogu, J. O.; & Ahmed, T.	54
7.	An Overview Of Research Infrastructures Available In Nigerian Stored Product Research Institute And National Center For Agricultural Mechanization, Ilorin, Kwara State, Nigeria. Ayanda, I. F.; & Salawu, O. L.	69
8.	Growth Performance And Carcass Characteristics Of Guinea Pigs (<i>Cavia Porcellus</i>) Fed Diets Containing Plantain Peel Meal As A Replacement For Maize. Malik, A. A.; Kudu, Y. S.; Ibrahim, M. J.; Garba, P. C.; & Komo, T. S.	79
9.	On Idempotent of Some Orders-Preserving Full Contraction Mappings in Metric Spaces. Rauf, K. & Usamot, I. F.	88
10.	Analysis of Wet-Land Nerica Rice Production: A Case Study of National Cereal Research Institute Baddegi, Nigeria. Hakimi, D. & Batagi, S. A.	103
11.	Effects of Undesired Course of Study on Students' Academic Achievement in Nigeria Using Binary Logistic Regression. Adetutu, O. M.; Oguntolu, F. A.; & Abdullahi, U.	110
12.	Effects of Video Clips of Teachers in Classroom Practices and Teaching Observation on Performance of Trainee-Teachers in Practical Teaching Skills. Adedapo, A. Ph.D.	120
13.	Perception of Information and Communication Technology Status among Lecturers and Students on Teaching and Learning of Engineering in Federal University of Technology, Minna. Nuhu M. Sani; Alkali Babawuya; Lawal Sadiq S.; Enebe Vincent; & Idris Abubakar Mohammed	131

14. Relationship Between Prerequisite Knowledge in Mathematics and Students' Performance in Science in Makurdi Local Government Area of Benue State, Nigeria. **Sunday Ade Adeniran, Ph.D & Atsuwe Bernard Aondofa & Emmanuel Godbless Ejike** 138
15. Impact of Collateral Teaching Strategy on Unscientific Preconceptions and Performance in Evolution Concepts among Male and Female NCE Biology Students of North Central. Zone, Nigeria. **Dr. (Mrs.) Jiya Alice; Dr. (Mrs.) S. B. Olorukooba; Dr. (Mrs.) F. K. Lawal; & Prof. (Mrs.) M. A. Lakpini**..... 147
16. Assessment of Student-Teachers' of ICT Needs Using UNESCO ICT-CFT in Colleges of Education in North Central, Nigeria. **Ogunlade , Oyeronke Olufunmilola, Ph.D & Anaza, Abdulmumuni Onuyi, Ph.D** 161
17. Relationship between Availability of Laboratory Facilities and Academic Achievement in Biology among Secondary School Students in Minna Metropolis, Niger State, Nigeria. **Ibrahim, Ismail Kuta, PhD; Tukura, Saidu Charlse, PhD; Idris, Omeneke Atikatu; Mohammed, Amina Nana; Ali Fati; & Nndatsu, Abdulkadir**..... 177
18. Communities Perception on Urban and Agricultural Waste Dump on Environment along river Chanchaga, Minna, Nigeria. **Wakili, B. Y, NsoforG.N, Suleiman, Y. M and Emigilati, M A**..... 187
19. Relationship between Academic Performance and Use of Social Media among Senior Secondary School Students in Minna Metropolis, Niger State, Nigeria. **Saliu, R. M., Gambari, A. I., & Umeh, A.** 199
20. Social Media Exposure and Materialistic Values: A Dilema for Undergraduates at Lagos State University. **Yusuf, H. T., Odutayo, A. O., Akintola, M., & Yusuf, A. O**..... 206

JOSTMED, VOLUME 13(3), SEPTEMBER, 2017



**ARTICLES AND RESEARCH REPORTS
ON SCIENCE**

**PERCEPTION OF INFORMATION AND COMMUNICATION TECHNOLOGY STATUS
AMONG LECTURERS AND STUDENTS ON TEACHING AND LEARNING OF
ENGINEERING IN FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA**

**NUHU M. SANI¹, ALKALI BABAWUYA², LAWAL SADIQ S.³, ENEBE VINCENT⁴ & IDRIS
ABUBAKAR MOHAMMED⁵**

¹Department of Industrial Education,
Waziri Umaru, Federal Polytechnic, Birnin Kebbi, Nigeria

^{2&3}Department of Mechatronics Engineering,
Federal University of Technology, Minna, Nigeria

⁴Department of Mechanical Engineering,
Modibbo Adama Univeristy of Technology, Yola, Nigeria

⁵Department of Industrial & Technology Education,
Federal University of Technology, Minna, Nigeria

E-mail: babawuya@futminna.edu.ng

Phone No: +234-703-809-6888

Abstract

The study investigated the perception of Information and Communication Technology (ICT) status among lecturers and students on teaching and learning of engineering in Federal University of Technology, Minna. The Federal University of Technology, Minna is supposed to provide adequate ICT facilities and resources for teaching and learning in SEET and both Staff and Students of SEET are supposed to use these ICT facilities and resources in the teaching and learning process. However, the reverse is the case and therefore the need for this study. Cross sectional survey research design was adopted for the study. The sample of 1060 engineering staff and students randomly drawn from the eight (7) departments in the School of Engineering and Engineering Technology, Federal University of Technology, Minna in Niger State, Nigeria was used for the study. Two specific purposes and two research questions guided the study. Researcher developed questionnaire was used and administered in order to obtain the relevant information from the respondents. The instrument was subjected to content validity index (CVI) by three independent assessors from SEET. To establish the reliability of the instrument (Utibe-abasi sceptre stephen, 2013), the instrument was trial tested on 120 students and 15 staff of School of Agriculture and Agricultural Technology (SAAT), Federal University of Technology, Minna and a reliability coefficient of 0.86 was obtained using Cronbach Alfa method. Data obtained were analyzed using frequency count and percentage. The findings of the study revealed among others that 25% of the respondents have PC or laptops, access to internet services and uses them for academic matters, 75% of the respondents agree that projectors are available during the lecture hours. The followings recommendations were made among other; The University administration should provide internet access to students and also provide them with PCs in order to improve and facilitate their learning, Lecturers of SEET should be encourage to use projector during teaching.

Keywords: Information and Communication Technology, Teaching and Learning,
Engineering

Introduction

Information and Communications Technology (ICT) is an umbrella term that includes any communication device or application, such as: projector, visualizer, radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as

the various services and applications associated with them, such as video conferencing and distance learning (Israel, 2014). With this definition, it is difficult and maybe even impossible to imagine today and future learning environments that are not supported, in one way or the other by Information and Communication Technologies.

The current widespread diffusion and use of ICT in modern societies, especially by the young ones, (the so-called digital generation) then, it should be clear that ICT will affect the complete learning process today and in the future (Kenway & Bullen, 2014). But to what extent is this ICT available and accessible at Federal University of Technology, Minna remain a question to be answered from time to time, in the face of huge amount of capital investment on equipment and manpower noticeably the present laying of optic fibre cable connecting Gidan-Kwano to Bosso Campus. This is an effort by the University administration to increase the accessibility of the available network. There is a widespread belief that ICTs have an important role to play in changing and modernizing educational systems and ways of learning (Olokoba, 2014) and (Yves, Dieter, & Marcelino, 2006). The teaching of engineering requires theoretical and practical demonstration of courses that are mostly mathematical and graphical in nature. Federal University of Technology, Minna is one of the specialized Federal Universities in Nigeria with nine (9) Schools of which School of Engineering and Engineering Technology (SEET) is one of them. The SEET also has nine (9) academic departments, these including; Agriculture and Bio-resources, Civil, Electrical and Electronics, Mechanical, Chemical, Telecommunications, Computer, Mechatronics, Materials and Metallurgical Engineering.

Information and Communication Technology in the past decades have not revolutionized science, engineering and technology at an unprecedented speed. This has led to short research cycle, short product design and redesign time, broader and deep understanding of teaching and learning, (Sunday, 2010). According to Opira (2010), during the last two decades, countries (including Nigeria) have invested heavily in ICT. Indeed, the use of ICT in education and training has been a key priority in Nigeria in the last decade, although progress has been uneven. ICT has had a major impact on the education sector, on organization and on teaching and learning methods (Chang, 2001). Yet there are considerably different ICT expenditure levels between institutions within the country. Some schools have embedded ICT into the curriculum, and demonstrate high levels of effective and appropriate ICT use to support teaching and learning across a wide range of subject areas. However, some other schools are in the early phase of adopting ICT, characterized by important enhancements of the learning process, some developments of e-learning (ICT-enabled learning), but without any profound improvements in learning and teaching (Yves, Dieter, & Marcelino, 2006; and Kenway & Bullen, 2014). There is, however, little evidence on the perception of ICT to the learning domain in Nigeria higher education of learning especially engineering despite the effort of the last decades. Therefore, the need for the study.

Purpose of the Study

The study assesses the perception of information and communication technology status among lecturers and students on teaching and learning of engineering in Federal University of Technology, Minna. Two specific purposes guided the study, these are;

- (i) Determine the availability and accessibility of ICT facilities for teaching and learning of engineering
- (ii) Determine the adequacy of ICT resources for teaching and learning of engineering

Research Questions

The following research questions raised guided the study:

- (i) What ICT facilities are available and accessible for teaching and learning of engineering?
- (ii) How adequate are ICT resources for teaching and learning of engineering?

Research Methodology

The study employed a cross-sectional survey research design. Cross sectional design allowed for the study of the population at one specific time and the difference between the individual groups within the population to be compared. The study was carried out among undergraduate students and staff of School of Engineering and Engineering Technology, Federal University of Technology Minna. The population of (SEET) Federal University of Technology, Minna as at 2012/2013 session for other departments and 2015/2016 session for Mechatronics department is presented in Table 1. Lecturers formed part of the study because of their roles in the teaching and learning process in the University.

Table 1: Categories of Respondents

Level	Mechanical	Civil	Electrical	Agric.	Mechatronics	Telecom	Chemical
500	106	150	150	85	0	29	130
400	93	120	170	46	0	32	99
300	138	120	160	45	0	55	126
200	183	160	250	12	30	52	154
100	144	160	160	120	76		150
Total	664	710	890	308	106	168	659

Random sampling technique was used to draw 1000 students and 60 staff (respondents) and seven (7) departments in the School of Engineering and Engineering, Federal University of Technology, Minna used for the study. The instrument used for data collection was a questionnaire developed by the researcher and comprises of two sections (A and B). Section (A), deal on personal information, while section (B) was further divided into four parts to address each research question. The instrument was subjected to content validity index (CVI) by three independent assessors from SEET. To establish the reliability of the instrument (Utibe-abasi sceptre stephen, 2013), the instrument was trial tested on 120 students and 15 staff of School of Agriculture and Agricultural Technology (SAAT), Federal University of Technology, Minna and a reliability coefficient of 0.86 was obtained using Cronbach Alfa method. The researchers administered the copies of the questionnaires to the respondents with the help of research assistants. Items which needed clarification were explained to the respondents. Data obtained were analyzed using frequency count and percentages. The sample selected and category of the respondents that took part in the study is herein presented in Table 2.

Table 2: Sample Selection and Category of Respondents

Categories	Number	Sample	Percentage
Students	8, 000	1000	80 %
Lecturers	215	60	20 %
Total	8215	1060	100.0 %

Table 3: Frequency Count and Percentage of Respondents (students) that Participated in the Survey and Distribution of Respondents ACCORDING to Year of Study

Attributes	Level	Freq. Count	Percentage
Year of study	100L	230	23%
	200L	240	24%
	300L	180	18%
	400L	160	16%
	500L	190	19%
Total		1000	100%
Department	Agric. Eng.	90	9%
	Chemical Eng.	190	19%
	Civil Eng.	200	20%
	Electrical Eng.	250	25%
	Mechanical	190	19%
	Mechatronics	30	3%
	Tel Com.	50	5%
Total		1000	100%

Results

Research Question 1

What ICT facilities are available and accessible for teaching and learning of engineering?

Table 4: Frequency Count and Percentage of Respondents on their Opinion on the availability and accessibility of the Students in using ICT Facilities for Teaching and Learning of Engineering

ICT Resources	Status	Freq. Count	Percentage
Computers/pc classroom	in Not sure	750	75 %
	Fairly available	150	15 %
	Available	100	10 %
Total		1000	100%
Internet & E-mail	Not sure	575	57.5 %
	Fairly available	325	32.5 %
	Available	100	10 %
Total		1000	100 %
Television set	Not sure	425	42.5 %
	Fairly available	375	37.5 %
	Available	200	20 %
Total		1000	100 %
Projector	Not sure	250	25 %
	Fairly available	450	45 %
	Available	300	30 %
Total		1000	100 %
Software	Not sure	320	32 %

	Fairly available	470	47 %
	Available	210	21 %
Total		1000	100 %
Computer laboratory	Not sure	100	10 %
	Fairly available	505	50.5 %
	Available	395	39.5 %
Total		1000	100 %
Video conferencing	Not sure	825	82.5 %
	Fairly available	175	17.5 %
	Available	0	0 %
Total		1000	100 %

From table 4, the following findings were revealed about the availability and accessibility and skills using ICT facilities: 25% of the students have PC or laptops, access to internet services and uses them for academic matters. 75% of the students agree that projectors are available during the lecture hours. 70% of the students have and can use relevant software for academic purposes. About 90% of the students indicate that computer laboratories are available and assessable. All the respondents agreed that 17.5% of the staff and students use video conferencing in curriculum implementation.

Research Question 2

How adequate are ICT resources for teaching and learning of engineering?

Table 5: Frequency count and percentage of respondents on their opinion on adequacy of ict resources for teaching and learning of engineering

ICT resource	Status	Freq. Count	Percentage
Computers/ pc in classroom	Inadequate	750	75 %
	Fairly adequate	150	15 %
	Adequate	100	10 %
Total		1000	100 %
Internet &E-mail	Inadequate	575	57.5 %
	Fairly adequate	325	32.5 %
	Adequate	100	10 %
Total		1000	100 %
Television set	Inadequate	425	42.5 %
	Fairly adequate	375	37.5 %
	Adequate	200	20 %
Total		1000	100 %
Projectors	Inadequate	250	25 %
	Fairly adequate	450	45 %
	Adequate	300	30 %
Total		1000	100 %
Software	Inadequate	320	32 %
	Fairly adequate	470	47 %
	Adequate	210	21 %
Total		1000	100%
Computer laboratory	Inadequate	100	10 %

		Fairly adequate	505	50.5 %
		Adequate	395	39.5 %
Total			1000	100 %
Video conferencing equipment		Inadequate	750	75 %
		Fairly adequate	175	17.5 %
		Adequate	75	7.5 %
Total			1000	100 %

Table 5 show the following findings were revealed about the adequacy of ICT resources: 25% of the respondents agree that PC or laptops are adequate, while 75% of the respondents also agree that projectors are adequate for use during the lecture hours. 68% of the respondents indicate that software is adequate for academic purposes. 90% of the respondents indicate that computer laboratories are adequate. 25% of the respondents agreed that video conferencing is adequate for curriculum implementation.

Findings

The findings of this study revealed that;

- (i) 25% of the respondents have PC or laptops, access to internet services and uses them for academic matters
- (ii) 75% of the respondents agree that projectors are available during the lecture hours
- (iii) 70% of the respondents have and can use relevant software for academic purposes
- (iv) About 90% of the respondents indicate that computer laboratories are available and assessable
- (v) All the respondents agreed that 17.5% of the staff and students use video conferencing in curriculum implementation.
- (vi) 25% of the respondents agree that PC or laptops are adequate
- (vii) while 75% of the respondents also agree that projectors are adequate for use during the lecture hours
- (viii) 68% of the respondents indicate that software are adequate for academic purposes
- (ix) 90% of the respondents indicate that computer laboratories are adequate
- (x) 25% of the respondents agreed that video conferencing is adequate for curriculum implementation.

Recommendations

Based on the findings of the study, the following recommendations were made:

- (i) The University administration should provide internet access to students and also provide them with PCs in order to improve and facilitate their learning
- (ii) Lecturers of SEET should be encourage to use projector during teaching
- (iii) Lecturers should be encourage to use computer in their teaching
- (iv) Internet facilities should be provided to staff offices

References

- Chang, D. (2001). *Engineering education: Where do we go from here*. Denmark Copenhagen: SEFI Publishers.
- Israel, B. O. (2014). The impacts (Positive and Negative) of ICT on education in Nigeria. *Journal of developing countries*, 14(23). Retrieved from www.iiste.org on 23rd May, 2017.

- Kenway, J., & Bullen, E. (2014). *Education in the age of uncertainty: An eagles eye-view, compare*. National science and technology policy. National research council of Nigeria. Retrieved from <http://www.sndp.org/nrcm/nst> on 15th April, 2017
- Olokoba, A. A. (2014). Impact of information communication technology (ICT) on the management and performance of secondary school teachers in Kwara state, Nigeria. *International Journal of Education Learning and Development*. European centre for research. 2(3), 60-67.
- Opira, G. (2010). Effects of information and communication technology on students' learning: A case of Gulu University. Unpublished Masters Thesis, Makerere University, Uganda.
- Sunday, A. A. (2010). The impact of information and communication technology (ICT) on teaching and learning of Physics. *International Journal of Educational Research and Technology (IJERT)*, 1(2), 48 – 59.
- Utibe-abasi, S. S. (2013). Availability, accessibility and utilization of information and communication technology in physics teaching in Akwa Ibom state, Nigeria, West Africa. *Modern applied science*, 7(9).
- Yves, P., Dieter, Z., & Marcelino, C. (2006). A review of the impact of ICT on learning Working. Paper prepared for DG EAC. *JCR, European Commission*.