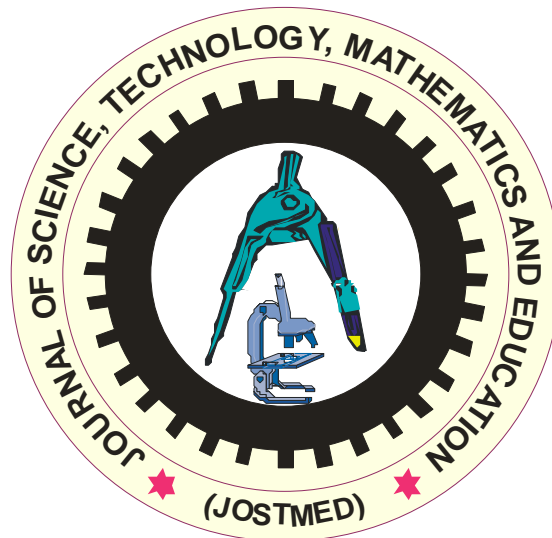


JOURNAL OF SCIENCE, TECHNOLOGY,
MATHEMATICS AND EDUCATION
(JOSTMED)



ISSN: 0748 – 4710

VOLUME 11(1), APRIL, 2015

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: jostmedscience@yahoo.com; jostmed@futminna.edu.ng or managing editor's e-mail: gambarii@yahoo.com; Gambari@futminna.edu.ng; gambariisiaka@gmail.com

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 Ten Thousand (N10,000) 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.jostmed.com: www.jostmedng.com and 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.

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; gambariisiaka@gmail.com
gambari@futminna.edu.ng ; gambari@codel.futminna.edu.ng

Website: www.gambariisiaka.com

Blogsite: www.drgambari.com

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

EDITORIAL BOARD

Editor-in-Chief	-	Dr. T. O. Alabi
Managing Editor	-	Dr. A. I. Gambari
Assistant Managing Editor	-	Mr. A. A. Yaki
Associate Editor	-	Mr. U. S. B. Idris
Associate Editor	-	Mr. 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 Mishra	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

SUSSCRIPTION RATES

Nigeria Rate (Personal)	N1,000.00
Rate (Institutions)	N2,000.00
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. IBRAHIM, I. L.¹; AUDU, A. A.²; UMAR, M. T.¹; MOHAMMED, S. H.³; DAGACI, M. Z.¹ & ABDULRAHMAN, A.¹
¹Department of Chemistry, Ibrahim Badamasi Babangida University, Lapai, Nigeria.
²Department of Pure & Applied Chemistry, Bayero University, PMB 3011, Kano
³Niger State College Of Education, Minna
E- Mail: isahlahan@gmail.com Phone No: +234-803-365-3492
2. IBRAHIM, K. O.¹; OLUMUYIWA, J.¹; YUSUF, M. A.² & OLATUNJI, J. A.³
¹Department of Geology & Mineral Sciences, University of Ilorin, Ilorin, Nigeria.
²Department of Geology, Federal University of Technology, Minna, Nigeria
³Department of Mineral Resources Engineering, Kwara State Polytechnic, Ilorin.
Email: ibrakeo@yahoo.com, Phone No: +234-813-337-3276
3. OLADEJO, S. O.¹; AIBINU, A. M.¹; ONWUKA, E. N.¹; & UGWEJE, O. C.²
¹Telecommunication Engineering Department,
Federal University of Technology, Minna, Nigeria
²Research, Education & Curriculum
Digital Bridge Institute,
Utako District, Abuja Nigeria
E-mail: dayoladejo777@gmail.com Phone No: +234-807-960-2830
4. AFOLAYAN, G. B.¹; FARUK, N.²; BELLO, O. W.³; AYENI, A. A.²; ALI, M. H.⁴ & OLUFEMI, M. O.⁵
¹Network Technical Service Department, Wireless Unit,
Huawei Technologies, Ikoyi, Lagos
²Department of Telecommunication Science, University of Ilorin, Ilorin, Nigeria
³Department of Information and Communication Science University of Ilorin, Nigeria
⁴Department of Physics, Bayero University, Kano, Nigeria
⁵Department of Mathematics and Information Science,
Northumbria University, Newcastle, UK
¹Email: gbemisola.afolayan@huawei.com, olufemi.oludare@northumbria.ac.uk,
faruk.n@unilorin.edu.ng, ayeni.a@unilorin.edu.ng
Phone No: +234-803-317-6724
5. MEJABI, O. V.¹; AZEEZ, A. L.²; ADEDOYIN, A.¹ & OLOYEDE, M. O.¹
¹Department of Information & Communication Science,
²Department of Mass Communication,
Faculty of Communication & Information Sciences,
University of Ilorin, Ilorin, Nigeria
E-mail: ovmejabi@unilorin.edu.ng, azeez_ogo_oluwa@yahoo.com
yinkaadedoyin22@yahoo.com, tahir_oloyede@yahoo.com
Phone No: +234-803-721-3521
6. PHILIP U. AKOR (Ph.D),¹ JIBRIL A. ALHASSAN (Ph.D)²
¹Library and Information Technology Department,
²Library Services Department,
Federal University of Technology, Minna. Nigeria.
Email: pukor@gmail.com Phone No.: +234-803-688-0881

7. ANIBIJUWON, I. I.; OMOJASOLA, P. F.; ODAIBO, D. O. & ADELABU, E. O.
Public Health Laboratory Unit, Department of Microbiology, Faculty of Life Sciences,
University of Ilorin, P.M.B 1515, Ilorin, Kwara State, Nigeria.
E-mail: kunledoexploit@yahoo.com Phone No: +234-803-611-5296
8. JONAH, S. A.¹; OKORO, N. N.²; UMAR, M.³, BAKARA, I. U.⁴ & UMOH, S. E.⁵
Department of Physics, Federal University of Technology, Minna, Nigeria
Department of Physics, University of Abuja, Abuja
E- mail: sajonah2003@yahoo.com Phone No.: +234-806-468-7977
9. OYEDUM, O. D.¹; ABDULLAHI, S. A.²; UGWUOKE, P. E.³; MUHAMMAD, B. L.²
& OLOMIYESAN, B. M.⁴
¹Physics Department, Federal University of Technology, Minna, Nigeria
²Physics Department, Ibrahim Badamasi Babangida University, Lapai, Nigeria
³National Centre for Energy Research & Development, University of Nigeria, Nsukka
⁴National Examinations Council, Physics Unit, EDD, Minna, Nigeria
E-mail: ^{1*} oyedumod@yahoo.com; Phone No: +234-803-397-9963
10. FOLORUNSO, I. O.¹, BALE, R. B.². & ADEKEYE, J. I. D.³
¹ Department of Geophysics, University of Ilorin, Ilorin, Nigeria.
^{2,3} Department of Geology and Mineral Sciences, University of Ilorin, Ilorin, Nigeria.
E-mail: folorunso.io@unilorin.edu.ng; Phone No: +234-703-381-9230
11. JONAH, S. A.¹, JIMOH, M. O.², UMAR, M.³
¹Department of Physics, Federal University of Technology, Minna, Nigeria
²Department of Geology, Federal University of Technology, Minna, Nigeria
³Department of Physics, University of Abuja, Abuja
E-mail: sajonah2003@yahoo.com Phone No.: +234-806-468-7977
12. OLALEYE, O. T.¹; AKINYELE, J. O.² & OLATEJU, O. T.²
¹Department of Civil Engineering, Moshood Abiola Polytechnic, Abeokuta Nigeria
²Department of Civil Engineering, Federal University of Agriculture, Abeokuta Nigeria
E-mail: otolaleye@yahoo.com Phone No: +234-803-384-3648
13. DAVID GANA TSADO¹, MUHAMMAD ADAMU², & MANASE AUTA³
¹Department of Chemical & Process Engineering,
Faculty of Engineering & Physical Sciences,
University of Surrey, GU2 7XH, Guildford UK
²Department of Chemical Engineering,
The Federal Polytechnic, Bida, Nigeria
³Department of Chemical Engineering,
Federal University of Technology, Minna, Nigeria
E-mail: mudams2004@gmail.com Phone No.: +234-806-529-5882
14. OLUTOYE, M. A.¹ & HAMEED, B. H.²
¹Department of Chemical Engineering,
Federal University of Technology, Minna, Nigeria
²School of Chemical Engineering, Engineering Campus,
Universiti Sains Malaysia, 14300 NibongTebal, Penang, Malaysia
E-mail: m.olutoye@futminna.edu.ng Phone No.: +234-803-405-9454

15. JIMOH, A. K.¹ & TAIWO, O. A.²
¹Department of Statistics and Mathematical Sciences,
College of Pure and Applied Sciences,
Kwara State University, Malete, Nigeria
²Department of Mathematics, Faculty of Physical Sciences
University of Ilorin, Ilorin, Nigeria
E-mail: abdulazeezjimoh32@yahoo.com; oataiwo2002@yahoo.com
Phone No: +234-803-576-8758
16. IDRIS, L.¹; YAHAYA, Y. A.² & MUHAMMAD, R.³
Department of Mathematics/Statistics,
Federal University of Technology, Minna, Niger State, Nigeria.
E-mail: ¹laminu.idris@futminna.edu.ng, ²amuda_yahaya@futminn.edu.ng,
³r.muhd@futminna.edu.ng
Phone No: +234-803-570-3358
17. PROF. EMMANUEL E. ACHOR¹, PETER O. AGOGO (Ph.D)² & AYUBA P. DUGURYIL (Ph.D)³
^{1,2}Department of Curriculum and Teaching, Benue State University, Makurdi
³Department of Integrated Science, Federal College of Education,
Pankshin, Plateau State.
E-mail: nuelachor@yahoo.com Phone No: +234-805-781-5311
18. KEHINDE A. ADENIJI¹ & MARUF O. IBRAHIM² (Ph.D)
¹Department Of Science Education, Federal University, Dutsin-Ma, Katsina
²Department Of Science Education, Ahmadu Bello University, Zaria
¹E-mail: xyoriented@gmail.com; marolaib@gmail.com¹
Phone No.: +234-803-766-0561
19. FOLUKE N. BOLU-Steve (Ph.D) & PELEOWO, D. O.
Dept. of Counsellors Education
University of Ilorin, Ilorin, Nigeria
E-mail: bolusteve2002@yahoo.com Phone No.: +234-803-374-9768
20. USMAN, I. G. (Ph.D.)
Department of Counselling Psychology,
Faculty of Education and Arts,
Ibrahim Badamasi Babangida University, Lapai, Niger State, Nigeria
E-mail: usmanidris60@gmail.com Phone No: +234-701-292-8880
21. ALABI, T. O. & NDATSU, A.
Department of Science Education, School of Science and Technology Education
Federal University of Technology, Minna-Niger State, Nigeria
E-mail: dralabimotayo2012@gmail.com; ndafather@gmail.com
Phone No: +234-803-857-3000; +234-806-453-1808
22. IBRAHIM SUKOLA TAMBAYA
Department of Science Education, Faculty of Science and Education,
Federal University Dutsin-Ma, P.Mb 5001, Katsina State.
Email: sibrahim@fudutsinma.edu.ng Phone No.: +234-806-550-6439

23. MURTALA, A. T. (Ph.D); LAWAL, A. A.; ODUWAIYE, R. O. (Ph.D); OMOSIDI, A. S. (Ph.D)
Department of Educational Management,
Faculty of Education, University of Ilorin, Ilorin Nigeria
E-mail: matukur2013@gmail.com; lawal.am1@unilorin.edu.ng;
oduwaiye@yahoo.com; drasomosidi@yahoo.com
Phone No: +234-803-337-9728

TABLE OF CONTENTS

1. Heavy Metals in Two Commonly Consumed Fishes (*Clarias Gariepinus* and *Tilapia Zilli*) in Kano City, Nigeria. Ibrahim, I. L.; Audu, A. A; Umar, M. T.; Mohammed, S. H.; Dagaci, M. Z. & Abdulrahman, A.
2. Determination of Groundwater Flow Direction in Kuje, FCT, Abuja, Nigeria. Ibrahim, K. O.; Olumuyiwa, J.; Yusuf, M. A. & Olatunji, J. A.
3. Call Admission Control: A Survey. Oladejo, S. O.; Aibinu, A.M.; Onwuka, E. N; & Ugweje, O. C.
4. Error Analysis For Empirical Path Loss Models in GSM and WCDMA Bands in Kano Metropolis Of Nigeria. Afolayan, G. B.; Faruk, N.; Bello, O. W.; Ayeni, A. A.; Ali, M. H. & Olufemi, M. O.
5. Analysis of the Inventory and Operation of the Open and Distance Learning Education through ICT In Nigeria. Mejabi, O. V.; Azeez, A. L.; Adedoyin, A. & Oloyede, M. O.
6. Evaluation of Reference Services in Academic Libraries: A Comparative Analysis of Three Universities in Nigeria. Philip U. Akor & Jibril A. Alhassan.
7. Microorganisms Associated With Frozen Fishes (Ice Fish) Sold at Various Markets in Ilorin Metropolis. Anibijuwon, I. I.; Omojasola, P. F.; Odaibo, D. O. & Adelabu, E. O.....
8. Identification and Mapping of Raw Sewage Discharge Points in Minna, Nigeria. Jonah, S. A.; Okoro, N. N.; Umar, M.; Bakara, I. U. & Umoh, S. E.
9. Design and Construction of A Natural Convection Solar Dryer For Drying Tuber Crops in Minna, Niger State, Nigeria. Oyedum, O. D.; Abdullahi, S. A.; Ugwuoke, P. E., Muhammad, B. L. & Olomiyesan, B. M.....
10. The Stratigraphy, Petrography and Structural Evaluation of Akiri and its Environs, Middle Benue Trough, Nigeria. Folorunso, I. O.; Bale, R. B. & Adekeye, J. I. D.
11. A Wet-Season Geoelectrical Investigation For Groundwater Development At A Built-Up Property At The Western Bye-Pass, Minna, Nigeria. Jonah, S.A.; Jimoh, M. O.; Umar, M.
12. Characterisation of Corncob Ash Pozzolan and its Performance in Concrete. Olaleye, O. T.; Akinyele, J. O. & Olateju, O. T.
13. Efficacy of *Moringa Oleifera* Seed as Sustainable Option in Water Treatment for Safe Drinking. David Gana Tsado; Muhammad Adamu & Manase Auta.....
14. Influence of Dual Preparatory Treatment Process on the Activity of Heterogeneous Catalysts towards Fame Synthesis. Olutoye, M. A. & Hameed, B. H.....

15. Integrated Collocation Methods for Solving Fourth Order Integro-Differential Equations. Jimoh, A. K. & Taiwo, O. A.....
16. Construction and Implementation of Some Hybrid Schemes for Solution of Ordinary Differential Equations (ODEs). Idris, L.; Yahaya, Y. A. & Muhammad, R.....
17. Effects of Cognitive Reasoning Ability and Prior Exposure to Content on Basic Science Achievement of Upper Basic Two Students in Plateau State. Prof. Emmanuel, E. Achor; Peter, O. Agogo & Ayuba, P. Duguryil
18. Roles of Mathematics Education in Good Governance and National Sustainability in Nigeria: A Case Study of National Confab. Kehinde, A. Adeniji & Maruf, O. Ibrahim.
19. Psychosocial Consequences of Stigmatization of People Living With Hiv/Aids as Perceived by Undergraduates of University of Ilorin, Kwara State Nigeria. Foluke N. Bolu-Steve (Ph.D) & Peleowo, D. O.....
20. Awareness of Autism among Teachers and Health Workers in Agaie and Lapai Local Government Area of Niger State: Counselling Implication. Usman, I. G. (Ph.D)
21. Effects of Automated Map Software on Achievement and Retention of Map Construction by Secondary School Geography Students in Minna Metropolis. Alabi, T. O. & Ndatsu, A.
22. Impact of Hands-On Learning Activities on Academic Achievement of Senior Secondary Biology Students in Zaria, Kaduna State. Ibrahim Sukola Tambaya.....
23. Academic Human Resources Situation in Kwara State Polytechnic, Ilorin Nigeria. Murtala, A. T.; Lawal, A. A; Oduwaiye, R. O. (Ph.D); & Omosidi, A. S.