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Teachers' Perceived Usefulness of Social Media in Mathematics Instruction: A Pragmatic Approach to Combating Socio-Economic Challenges

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ABSTRACT

The researchers investigated perceived usefulness of social media in mathematics teaching and learning in colleges of education in Enugu State with a view to determining how families can leverage social media to address socio-economic challenges. The design of the study was descriptive survey research design which sought the opinions of teachers and students on the same subject matter. The population of the study was all the teachers and students in the Department of Mathematics in the public colleges of education in Enugu state. The sample of the study was 128 respondents, comprising 31 teachers and 97 students gotten through accidental sampling technique. The instrument for data collection was Perceived Usefulness of Social Media in Mathematics Instruction in Colleges of Education Questionnaire (PUSMMICEQ) developed by the researchers. PUSMMICEQ was properly validated by experts. The reliability index of the instrument was 0.82 using Cronbach Alpha. The findings of the study show that both teachers and students who are also part of the families have high perception on the usefulness of social media in mathematics education, raising hope of improving productivity in mathematics education based on shared ideas, knowledge and skills through social media. Nonetheless, male teachers exhibited higher levels of social media use and perceived usefulness. Based on this pragmatic approach, it was found that social media has the potential to bridge gaps in mathematics education but to maximize its impact on improving family wellbeing, gender sensitive strategies need to be employed.

Keywords: Social media, mathematics education, gender, socio-economic challenges, teachers' and students' perception

1. Introduction

Family living survival amid mounting and threatening socio-economic challenges could be addressed through technology. These challenges if not surmounted could be a hindrance not only to the family well-being and development but also to educational development. These challenges could be solved by leveraging Information and Communication Technology (ICT) which has made the world a global village. ICT was viewed as the technologies used for information processing, communication and digital content creation (Barshar, 2017). Such technologies include computers and software, internet and networking, mobile devices, digital media and social media, among others (Barshar, 2017). These digital tools and platforms can be used to enhance productivity for family living survival amid socio-economic challenges through education. Fortunately, in this 21st century, families are investing heavily on education of their members. Education can

lay a solid foundation for combating socio-economic challenges if necessary inputs are made by way of interventions in instructional strategies and media of instruction. It has therefore become imperative to venture into solving some of these challenges through mathematics education. It would appear that there have not been adequate instructional interventions to develop skills necessary for knowledge economy in mathematics education.

Mathematics evolved as a result of man's quest to count, calculate, measure, collate group, organize and predict events, among others, through application of reasoning. There is a generally accepted notion that without mathematics, there will be no science, without science, there will be no technology and without technology, there will be no development and modern society. Many disciplines and careers require adequate knowledge of mathematics to excel in them. Thus, a good knowledge of mathematical skills is essential in many human endeavours such as small business owners, textile and clothing, fashion designing, construction works and home making especially, in nutrition and dietetics.

In the field of cooking and baking, for instance, one needs measuring skills from mathematics to do so. In soup making, proportionate quantity of ingredients are measured and used. Sometimes, there could be need to multiply, subtract, add or divide ingredients to get adequate proportion needed at a time to make a good soup (Odo et al., 2021). In commercial activities, for instance, if a cup of garri is sold for N20, a person who wants to buy 250 cups of garri or more would need mathematics skills of addition and multiplication to determine the amount of money involved. In managing money that could sustain family living amid socio-economic challenges, one needs to draw up a scale of preference. Ordering of wants are numerically determined to be able to access the most pressing wants in that order, while allowing other wants to be real or opportunity cost. Opportunity cost is the real cost of anything in the sense of the alternative that has to be foregone in order to do so. Hence, ordering of wants are numerical activities which has made numeracy a focal point in all areas of human activities. Essentially, Nigeria government recognizes that building individuals on numeracy is a catalyst for wealth creation, hence, its inclusion as a component of the general objectives of education, which is inculcating permanent literacy and numeracy and the ability to communicate effectively (Federal Republic of Nigeria, 2014). Thus, for mathematics education to be a family living survival strategy amid mounting and threatening socio-economic challenges, mathematics teachers ought to portray learners as active, interacting and collaborating with teachers and other learners in this era of technology driven instructional delivery.

Technology driven instructional strategy is an important issue in education. Technology evolution has been a driver for reform in mathematics teaching and learning (Chang as cited in Ameen, 2018). The benefit of using Information and Communication Technology (ICT) in mathematics instruction could be the antidote that may surmount socio-economic challenges among families. Nowadays, ICT appears to be increasingly becoming the medium for transmitting information, knowledge, skills and ideas from one person to another. In this context, ICT can be viewed as the use of electronically manipulated devices to store, retrieve or disseminate information in science, technology and mathematics instruction through various media and platforms. Some of ICT tools that can be used in mathematics instructions are computers, calculators, television, DVD player, white boards, smart board, overhead projectors, smart phones.

Considering how some of these ICT tools could be used is necessary, especially, at the tertiary institutions where the highest levels of mathematics are taught. For instance, compute hardware be it desktop, laptop or tablets are used for accessing learning materials that textbooks may not possess. Computer can be used by mathematics teachers to demonstrate a lesson, present new material and illustrate new programs. Another ICT tool like smart phones can be used in a variety of ways in classroom instruction. It can be used to illustrate problem solving in mathematics and as a voice recorder, which can be referred to at a later time. These tools when used in mathematics classroom instruction could enhance contextual understanding by students and may improve their academic achievement in mathematics, biology, chemistry and physics and by extention improves family living survival occasioned by socio-economic challenges ravaging humanity.

Traditionally, mathematics biology, chemistry, physics classroom instructional delivery have been characterized by teachers dishing out information to passive students, who listen and take down notes. But with the advent of technology, the paradigm has changed. According to Adeyanju (2012), ICT enable students and teachers to have access to available resources based on increase on globalization. The author opined that ICT is gradually changing the ways things are done including education. For tertiary institutions to contribute to national transformation, the use of ICT in instruction becomes imperative. According to research report, ICT has the potential to transform teaching and learning process (UNESCO, 2015), thereby making teachers to become learning facilitators, collaborators, coaches, mentors and knowledge navigators instead of dispensers of knowledge. With the introduction of ICT, the ways students get and share information is increasing especially, in tertiary institutions. According to Ali (2020), ICT resources can also be found in rural communities. ICT also exists in difference networks such as social media, academic, research, communication and commercial networks (Olasedidum, 2021).

Social media is a means of getting and sending information and exchanging ideas in virtual communities and networks. Social media can be viewed a social structure made up of actors or organization and their interactions. It is a platform for broadcasting information and communication and have suddenly found its way into education. Students now use internet for most of their daily activities and information gathering as distinct from what was obtained in the past, which was mainly for entertainment (Orji & Ozioko, 2021). But

according to Hudson (2019), social media refers to the websites and applications that are designed to allow people share content quickly, efficiently and in real time. In the words of Tufts University (2020), social media is a means of interactions among people, in which they create, share and exchange ideas in virtual communities and networks. Some social media tools and platforms suggested for online teaching and learning are Youtube, facebook, blogs, twitter, instagram, snapchat, flickr (Mishra et al., 2020). These tools were hitherto not used for academic purposes but for games and communication. As a tool for education, social media share similar characteristics with cooperative learning strategy. Cooperative learning strategy can be viewed as an educational approach where heterogeneous small groups of students work together to achieve academic goals. Students in each group interact with one another, exchange view points, share ideas and information, seek for additional information and make decision about their findings on a particular topic. These attributes exist in the use of social media for academic purposes.

Social media are classified into discussion fora, which aim to share news and ideas; bookmarking and content correction networks, which deal with how to discover, give and share new contents; anonymous social networks, which communicate anonymously (Sorokina, 2020). The author noted that there are also media sharing networks, which share photos, videos and social networks, which connect persons or people. Social networking sites include twitter, 2go and google talk, among others. These classes of social media when understood and used in mathematics classroom instruction may open a new vista of engaging students in instruction since the world is now a global village. From the foregoing, social media tools can facilitate mathematics instruction especially at colleges of education where smart phones laptops are common among students. The colleges of education which is the focus of this study award Nigerian Certificate in Education (NCE) which is the minimum teaching qualification in Nigeria. Adopting online digital platform like social media in mathematics educations in colleges of education could become prevalent and consequential trend to future education since education must prepare people for the future. Consequently, learners need to learn with technology. Among the yardstick for measuring success at any education system is the ability of the product (students) to be creative to be able to sustain family living occasioned by mounting and threatening socio-economic challenges. Such challenges could be solved through mathematics education. The level of mathematics skills acquired determines the level of science and technology that would be used to build economic and national development (Jayanth, 2019). Using social media in mathematics classroom could create online mathematics communities to share mathematics resources, tutorials, discussions, new skills enhancing employability, similar experiences and challenges, resource management which could improve the socio-economic wellbeing of families and perhaps, help to navigate the complex challenges of man. This is because, social media has the tendency to allow families, friends, students and teachers to create and share contents in form of information necessary to improve mankind. However, the adoption of social media in colleges of education shall depend on how mathematics teachers perceive its usefulness.

Usefulness can be viewed as the quality of being of practical use to achieve a goal or quality of having utilitarian value. Perceived usefulness is the belief or awareness of mathematics teachers in colleges of education on the utilization of social media to achieve effective teaching and learning in mathematics. But, an the words of Davis as cited in Olosedidum (2021), perceived usefulness is the degree to which a person believes that using a particular system would enhance one's job performance. However, employing social media in education shall depend on how mathematics teachers and students view its usefulness as against what obtains in the traditional face to face instruction. Mathematics teachers' perceived usefulness of social media could be in terms of attitudes, verbal representations, visual, associations, experiences and similar feelings related to mathematics instruction especially when juxtaposed with the issue of gender in education. Thus, for social media to be of use for teaching effectiveness, the teachers' gender need to be investigated to ascertain if both genders have different perception on their usefulness in mathematics instruction. This inquiry is necessary since mathematics teachers comprise of male and female with different abilities and views. It has been reported that teachers perception of classroom structure varies with gender (Omokaro & Nwamunu, 2020).

Gender is the disposition of mathematics teachers to using social media platform on the basis of being male or female in line with societal expectation. Granted that maintenance of computer and handling of computer hardware is a dominant area for males, the female gender might perceive social media as a way of communication where they usually outperform their male counterparts. Jackson et al as cited in Olasediudum (2021) conducted a study on gender and use of internet resources and found that, while females used email more that males, males equally used web more than females. Similarly, Omokaro and Nwanunu (2020) found that male teachers have higher positive attitude towards mathematics teaching and learning than their female counterparts, just as Abdulkarin et al. (2019) found not difference between them. The findings of the authors were corroborated by Chen and Tsai (2015), who found that male showed more interest towards web-based learning activities than their female counterparts. In tandem with the finding of the Chen and Tsai is the finding by Hu (2016), who found that males have higher positive disposition towards utilizing computer in mathematics classroom instruction. According the author, males are stronger than females in terms of physical strength and vigor, since handling ICT tools is brain tasking activities which may not promote females' active involvement. However, Gambari (2010) and Yusuf and Afolabi (2020) opined that the gap between male and female academic staff has bridged in terms of ICT skills and even in some

technology driven instructional activities, the expertise of female academic staff have surpassed those of their male counterparts.

There are research report to show that gender gap can be bridged if both genders are exposed to the same amount and type of experiences on computer. Hence, the need to compare the opinions of male and female teachers with respect to perceived usefulness of social media on mathematics instruction especially, in colleges of education with a view to enhancing family living survival occasioned by mounting and threatening socio-economic challenges. Previous studies available to the researchers were mainly on enhancing students' academic achievement among others (Ali, 2020; Demuyakor, 2020; German Education Union, 2020; Guatam & Guatam, 2020; Misra et al., 2020). None examined the perception of mathematics teachers and students on the usefulness of social media in mathematics instruction with respect to gender especially in colleges of education. It is on the basis of the foregoing that, this study sought to determine perceived usefulness of social media in mathematics instruction in colleges of education in Enugu state, Nigeria, with a view to enhancing family living survival occasioned by mounting and threatening socio-economic challenges.

The role of Information and Communication Technology (ICT) keeps evolving in education. In higher institutions of learning, such as colleges of education, the use of ICT packages like social media tools could be of immense benefit to mathematics education. This is because, students and teachers at that level have either laptops or smart phones through which they can exchange ideas and information capable of making mathematics teaching and learning to be more accessible, more engaging and effective. The effectiveness of this strategy could be able to promote family living survival amid socio-economic challenges. For social media to bring about teaching effectiveness, the teachers' gender was worth investigating to ascertain if both genders have similar views on its usefulness in mathematics instruction in colleges of education. With positive perception from both genders, families could overcome some of the socio-economic challenges as a result of shared knowledge in virtual communities. Essentially, teachers perception on some teaching strategies could make or mar the intended objectives. Thus, the adoption of social media in mathematics instruction in colleges of education shall depend on the teachers' perception of its usefulness against the face to face instruction. Previous studies revealed the effectiveness of social media in instructional delivery in higher institution of learning. Available literature failed to show the influence of social media in mathematics education especially, in colleges of education with respect to teachers' gender. Also, lacking in literature, is the use of social media in mathematics education to connect families with similar experiences and challenges that could promote shared knowledge and collective empowerment. Granted that mathematics education stands to gain if social media is employed in mathematics instruction in colleges of education, not much is known about the opinion of mathematics teachers and students on perceived usefulness of social media on mathematics instruction in colleges of education. It is on the basis of the foregoing that, this study investigated perceived usefulness of social media in mathematics instruction in colleges of education in Enugu state, Nigeria. The general purpose of the study of the study was to determine the perceived usefulness of social media in mathematics instruction in colleges of education in Enugu state, Nigeria. The following issues were addressed:

1. What are the perceived usefulness of social media among teachers and students in mathematics instruction in colleges of education?
2. Are there differences in perception between male and female teachers on the usefulness of social media in mathematics instruction in colleges of education?

2. Methods and Tools

The design of this study was a descriptive survey research design. A descriptive survey research design, according to Nworgu (2015), is a design which aims at collecting data and describing systematically, the characteristics, features or facts about a given population. In this respect, facts on the opinions of teachers and students on perceived usefulness of social media in mathematics instruction in Colleges of Education in Enugu State, that might help families combat socio-economic challenges. The population of the study comprised all mathematics teachers and students in the two public colleges of education in Enugu State, Enugu State College of Education Technical and Federal College of Education, Eha-Amufu, made up of 31 mathematics teachers and 97 students. Apart from being the only public colleges of education in Enugu State, the two colleges were chosen because of the availability of wi-fi, laptops and regular power supply in the schools. The sample of this study was 128 respondents comprising of 31 teachers and 97 students. Multistage sampling procedure was employed in this study. The first stage was accidental sampling technique to select all the 31 teachers and 97 students in the Department of Mathematics in both Colleges. The second stage was the use of stratified random sampling technique to divide mathematics teachers along gender, 16 males and 15 females.

The instrument for data collection was tagged Perceived Usefulness of Social Media in Mathematics Instruction in Colleges of Education Questionnaire (PUSMMICEQ) developed by the researchers. PUSMMIGEQ was subjected to face validation by three experts and the experts' inputs helped to modify the instrument. Pilot study was conducted to determine the reliability of the instrument in another College outside the main study sample. The reliability of the instrument was 0.82 using Cronbach Alpha. Cronbach alpha was used because, the instrument was not dichotomously scored but on a four point likert type scale.

The administration of the instrument was done with two research assistants, one from each sampled College. Mean and standard deviation were used to answer research questions.

3. Results

Result in table 1 shows the perception of teachers and students on the usefulness of social media in mathematics instruction in Colleges of Education. The table revealed that items 1-10 had mean values ranging from 3.20 – 3.58 for both teachers and students. The mean values are above the cut off mean value of 2.50 set for decision. The result indicates high perception by both teachers and students on the usefulness of social media in mathematics instruction in Colleges of Education in Enugu State. The standard deviation ranging from 0.61 – 0.91 for both respondents shows homogeneity in agreement.

Table 1. Teachers' and Students' perceived usefulness of social media in mathematics instruction in Colleges of Education.

S/N	Item statements:	Teachers' perception				Students' perception			
		N	$\bar{X}$	SD	Decision	N	$\bar{X}$	SD	Decision
1.	Social media promote constructivism thereby enhancing teachers role as facilities in teaching and learning process	31	3.55	0.80	Agree	97	3.27	0.89	Agree
2.	Manipulation of social media tools like YouTube, Facebook and WhatsApp reduces boredom among students during mathematics instruction	31	3.36	0.87	Agree	97	3.43	0.66	Agree
3.	Utilization of social media in mathematics instruction improves students and teachers interest and attitudes in mathematics	31	3.43	6.04	Agree	97	3.40	0.76	Agree
4.	Social media tools enable teachers and students to collaborate and interact with one another on information gathering and dissemination's in mathematics concepts.	31	3.54	0.76	Agree	97	3.43	0.76	Agree
5.	Social media tools have made the teaching and learning of mathematics in Colleges of education relatively easy in terms of illustration and presentation of mathematical concepts	31	3.51	0.70	Agree	97	3.53	0.62	Agree
6.	Social media tools like desktop, laptop and tablets can be used to show models of mathematics like graphs using excel while access to educational materials relevant to mathematics instruction is faster using social media tools than textbooks.	31	3.48	0.73	Agree	97	3.20	0.91	Agree
7.	Social media platforms like smart boards aid visual learning and is so interactive that both teachers and students can draw, write or manipulate images on the board.	31	3.47	0.74	Agree	97	3.33	0.62	Agree
8.	Social media enhances contextual learning in mathematics thereby reduce the abstractness of the subject.	31	3.34	0.82	Agree	97	3.40	0.71	Agree
9.	Social media can record mathematical explanation which can be referred to at a later day, thereby saving time and energy spent on writing.	31	3.52	0.81	Agree	97	3.47	0.72	Agree
10.	Submission of mathematics assignment can be done through social media tools like Facebook, Whatsapp and Youtube regardless of distance	31	3.58	0.61	Agree	97	3.23	0.88	Agree
	Grand Mean		**3.48**	**0.75**			**3.37**	**0.75**	

Table 2 shows the mean difference in perceived usefulness of social media in mathematics instruction in Colleges of Education in Enugu State based on gender. The result shows that male teachers have higher mean than their female counterparts, indicating higher level of perceived usefulness of social media.

Table 2. Male and Female Teachers Perceived Usefulness of Social Media

Gender	Number	Mean	SD	Standard error mean
Male	16	30.0000	1.82574	0.45644
Female	15	21.1333	4.45400	1.15002

Table 3 above shows the t-test result on the significance difference in the mean responses of students and teachers on the perceived usefulness of social media for mathematics instruction in Colleges of Education in Enugu State. Based on the result, the t-value (df=126) = 1.82, p<0.05. The p-value of 1.96 is greater than 0.05 level of significance set for decision making. Thus, the null hypothesis of no significant difference was not rejected. Inference drawn was that there is no significance difference on the mean responses of both teachers and students on their perceived usefulness of social media in mathematics instruction in Colleges of Education.

Table 3. Teachers and Students Perceived usefulness of Social Media in Mathematics Instruction

Respondents	N	$\bar{X}$	SD	Df	t-call	Sig	Decision
Teachers	31	3.48	075	72.6	1.82	1.96	Not sign
Students	97	3.37	0.75				

Table 4 shows that t-test for independent samples assuming equal variance. The result from the t-test shows t(20) = 7.339, p=0.018, p <0.05. The p-value of 0.018 is less than 0.05 level of significance set for decision making. Thus, the null hypothesis is non-significant difference was not accepted. Inference drawn was that there is a significant difference in the mean responses of teachers on perceived usefulness of social media in mathematics instruction in colleges of education in Enugu State based on gender in favour of male teachers.

Table 4. Responses of Male and Female Teachers on Perceived usefulness of Social Media in Mathematics Instruction

Gender	N	$\bar{X}$	SD	Df	t-cal	Sig	Decision
Male	16	30.0000	1.82574	29	7.339	0.018	Sig
Female	15	21.1333	4.45400				

4. Discussion

The result shows that both teachers and students have high mean with homogenous standard deviation, indicating high perception and closeness in agreement. The result showed no significant difference in the mean responses of teachers and students on perceived usefulness of social media in mathematics instruction. This may be because, social, media has the potential to create and share content including educational materials and connect friends, colleagues, families, groups and communities based on shared interest, regardless of distance. It is also possible that both teachers and students are adequately prepared to embrace technology in mathematics instruction for enhanced productivity based on shared values. The benefit of using ICT (social media) in mathematics instruction as found from this study could be the antidote that may surmount socio-economic challenges affecting families as they exchange ideas and skills from mathematics education in virtual classroom. This finding is in agreement with Demuyakor (2020), who found that teachers considered online learning to be very useful. It also buttresses the finding of Ali (2020), who observed that online teaching and learning is a necessity for teachers and students. Again the German Education Union (2020) survey, corroborated the findings of Demuyakor (2020) and Ali (2020), when the author found that all the teachers in Germany used digital communication media such as email, social networks and other online platforms for their teaching outside the classroom during COVID-19. In tandem with the finding of the German Education Union (2020), is the finding by Gautam and Gautam (2020), who opined that online medium of instruction is more versatile and safer in terms of physical meeting, thereby saving time, money and energy spent if one has to travel. Thus, integrating social media in mathematics instruction is a pragmatic approach to combat threats posed by socio-economic challenges among families because, there are no known barriers to transacting any businesses.

We discovered that males have higher level of use and perceived usefulness of social media than their female counterparts. This may be because, the female gender seemed incapable of competing and collaborating with their male counterparts in terms of technology based instruction. The female gender could have misconstrued using social media in instruction as handling of computer hardware and computer maintenance which is a dominant area for males and perhaps, failed to perceive social media as a way of communication where they excel more than males. This finding agrees with Chen and Tsai (2015), who found that male teachers showed more interest towards web-based learning activities than their female

counterparts. Similarly, Hu (2016) found that males have positive disposition towards utilizing computer in mathematics instruction than females. According to the author, males are stronger than females in terms of physical strength and vigor, since handling of ICT tools is brain tasking activities which may not promote females active involvement. Corroborating these finding is the study by Omokaro and Nwanwnu (2020), who found that male teachers have higher positive attitude towards mathematics teaching and learning using technology than their female counterparts. But, in a study on the use of internet resources in classroom instruction, Jackson as cited in Olasedidum (2021) found that females use email more than males while males use web more than females. However, the finding of this study did not agree with Abdulkarim et al. (2019), who found no difference between males and females in terms of technology based instructional strategy. This may be because, both genders see themselves as equal competitors in technology education. However, to realize the full impact of social media on the society, there is the need to explore gender sensitive strategies.

5. Implications of the Study

As found from this study both teachers and students have high perception on the usefulness of social media in mathematics instruction in Colleges of Education in Enugu State. This shows that if applied in mathematics classroom could expose students and families to mathematics related career opportunities, thereby breaking cycle of poverty and improve socio-economic-status. However, gender sensitive strategies need to be employed to ensure full impact of social media on families' wellbeing.

6. Conclusion

Based on the findings of this study, both teachers' and students' productivity in mathematics education which translates to different families could be improved upon based on shared ideas, knowledge and skills that could promote self-reliance among families through social media. The finding of this study implicates physics, chemistry and biology teaching in tertiary institutions as teachers and students can leverage social media to share online resources in their respective areas and interact with one another to acquire digital skills that can promote self-employment. As a pragmatic approach to mathematics education aimed at improving the wellbeing of families, social media has made teaching and learning of mathematics to be more accessible, more engaging and effective as found from this study. With high perception from all the respondents, they have overcome some of the socio-economic barriers that once hindered their economic prosperity as a result of shared knowledge in virtual communities. With mathematics instruction through social media, families with similar experiences and interest could develop resilience and problem solving skills that could enhance their economic well being amid adversity. It is hereby recommended that relevant educational authorities should provide enabling environments for technology based media of instruction like social media to thrive with a view to helping families navigate socio-economic challenges ravaging the society. Gender issues in technology instruction should be addressed through the use of different learning styles within instructional environments.

References

1. Abdulkarim, A., Bomala, I. & Abimbola, N. G. A. (2019). Effect of ICT-driven pedagogy on the academic achievement of secondary school students within Gombe metropolis in geometry. *ABACUS – Journal of Mathematical of Association of Nigeria, 44*(1), 144-150.
2. Adeyanju, O. L. (2012). Lecturers' access to attitude and proficiency in Information and Communication Technology in Colleges of Education South-West, Nigeria. Unpublished Dissertation, University of Ilorin.
3. Ali, W. (2020). *Online and Remote Learning in higher Education Institutes: A Necessity in Light of Covid-19 Pandemic*. Higher education Studies.
4. Ameen, K. S. (2018). Innovative instructional strategies for teaching perception difficult topics in mathematics. In M. F. Salman (eds) *Enhancing Mathematics Education in Nigeria, 11-16*.
5. Barshar, L. M. (2020). Human Security for Sustainable Development in Nigeria: The Role of ICE. *Covenant Journal of Information and Communication Technology, 5*(2), 30-35.
6. Chen, R. S. & Tsai, C. C. (2005). Gender differences in Taiwan University Students Towards the Web-based Learning. *International Conference of Computers in Education, 133*(1), 629-632.
7. Demuyakor, J. (2020). Coronavirus (Covid-19) and online learning in higher institutions of education. A survey of the Ghanaian International Students in China. *Online Journal of Communication and Technical,* 10(3), 3-7.
8. Federal Republic of Nigeria (2014). *National policy on education,* Lagos: NERDC press
9. Gambari, I. A. (2010). Effect of compute supported comparative learning strategies on the performance of senior secondary school students in physics in Mina, Niger State, Unpublished Dissertation Thesis, University of Ilorin, Ilorin, Nigeria

10. Gautam, D. K. & Gautam, P. K. (2020). Transition to online higher education during Covid-19 Pandemic. Turmoil and way forward to developing country of South Asia. *Electronic Journal of General Medicine, 4*(1), 20-29.
11. German Education Union (2020). Digital pact for schools and digitalization in schools. Frankfort: GEW.
12. Hu, J. C. (2016). Why are so few women mathematicians? *The Atlantic.* Retrieved from https://www.google.com/amp/s/amp.theatlantic.com/amp/article/506417
13. Mishra, L., Gupta, T. & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 Pandemic. *International Journal of Educational Research Open,* (1) 10-15.
14. Nwabueze, A. U. & Ozioko, R. E. (2016). Information and communication technology for sustainable development in Nigeria. *Library philosopher and Practice (e-journal).* 600.
15. Nworgu, B. G. (2015). *Educational Research: Basic Issues and Methodology* (3rd Ed.) Enugu: University Trust Publishers. http://digitalcommunications.unt.edu/libphilpract/600
16. Odo, I. O., Ugwuanyi, C. C., Nwoye, M. N. & Shiaki, O. B. (2021). Enhancing wealth creation for sustainable national security through number and numeration aspect of mathematics education. Review of education. *Journal of the Institute of Education, University of Nigeria, Nsukka,* 33(1), 108 – 115.
17. Olasedidum, O. K. (2021). Lecturers' gender and perceived usefulness of social media in Colleges of Education in South West, Nigeria. *Kampala International University Journal of Education, 16*(1), 37-48.
18. Omokaro, B. & Nwanana, P. (2019). The role of mathematics education in the development of entrepreneurial skills among secondary school students in Ika South L.G.A., Delta State. *ABACUS – Journal of Mathematical of Association of Nigeria, 44*(1)560-567.
19. Orji, N. I. & Ozioko, L. C. (2021). Social media and academic stress as correlates of academic achievement of Biology Education Undergraduate Students. Unpublished undergraduate project, University of Nigeria, Nsukka.
20. Sorokina, O. (2020). Ten types of social media and how each can benefit your business. Retrieved from https://www.google.com
21. Tufts University (2020). Social media overview. Retrieved from https://www.thebalance.com
22. UNESCO (2015). *Transforming our world: Literacy for sustainable development.* http://www.un.esco.org/uil/litbase
23. Yadavi, D. K. (2017). *Exact definition of mathematics.* www.researchgate.net
24. Yusuf, M. O. (2005). Information and Communication Technology: Analyzing the Nigerian National Policy for Information Technology. *International Education Journal*.6(3), 316-321.