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AN OVERVIEW OF GENDER RESEARCH IN SCIENCE AND MATH EDUCATION FROM A NIGERIAN PERSPECTIVE

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Abstract

The purpose of this study was to investigate research on gender in science and math education carried out in Nigeria. Eight years of published papers from 2008 to 2015 are our selection. The focus was on identifying five aspects of science and math education: research areas, participant type, research design, chronological distribution, data collection method, and, lastly, data sources for the reviewed papers. We select various journal articles from the internet that are published based on the original authors' discussions about science and math education. The results provide a comprehensive overview of the essential logical coherence of the literature on science and mathematics education for the entire year in the three domains of science, mathematics, and science and mathematics education. Lastly, a discussion of the conclusions and suggestions was held.

Keywords: Science Education, Mathematics Education, Science and Mathematics, Gender, Nigeria

Introduction

Science is the methodical reflection of natural events and circumstances to discover facts about them and create laws and principles based on these facts, or the structured body of knowledge derived from such observations and verifiable or provable through additional research. Morris (1992). According to Harel (2008) "Mathematics is defined as the union of two sets: the set of WoU, which consist of all the institutionalised ways of understanding in mathematics throughout history, and the set of WoT, which consist of all the ways of thinking that characterised the mental acts whose products comprise the first set." P.286. On the other hand, science education is defined as the means of sharing the process and content of science with persons who are not regarded traditionally to be a member of the scientific community; the persons may perhaps be students, farmers, market women or else the entire community (Kola 2013). When the two disciplines (science and mathematics) contents are connected, they are referring to science and mathematics, science and mathematics integration in the teaching and learning is the mixing the two fields which

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is critical to motivate and involve students in meaningful learning (Furner, and Kumar, 2007; and Wilhelm, and Walters,2006).

The goal of integrating science and mathematics is to make teaching and to learn more meaningful in such a way that it will increase the students' interest and reduce their fair in learning science and mathematics. Moreover, they can apply it to solve their personal and societal problems all these depend on the quality of teaching and learning received by the students. In this sense, math and science have long been thought of as closely related fields.
(Orton, and Roper, 2000). They are symbiotic to each other because if science can supply students with concrete examples of abstract mathematical ideas, on the other hand, mathematics can enable pupils to reach a more in-depth understanding of science concepts (Riordain et al., 2015). Moreover, delivering means to quantify and explain science relationships (McBride, and Silverman,1991). The integration of science and mathematics together is considered more important than teaching the individual subject in isolation, as Koirala & Bowman (2003) and Frykholm & Glasson, (2005) established that integrating curriculum of different fields can deliver students with more reliable and significant learning experiences, rather than split concepts presented in single subject curricula.

In the 21st century where the global economy is fast growing in science technology and innovation, Nigeria as a developing nation needs a strong workforce of innovators, problem solvers inventors in the field of science and technology which can have diversified knowledge and skills to innovate and compete in the global marketplace as other countries. In spite of the global decline for the benefit of the pupils to take up science mathematics and technology (UNESCO 2014). The importance of science and mathematics to the nation's growth and development can never be overemphasised, however, the integration of these subjects at senior secondary school level in Nigeria has been not be giving much consideration, despite all its importance, while industrialized nations like the US and the UK. Moreover, Australia the issues of integrating science and mathematics has become history for long. Instead, they are at the stage of integrating four disciplines of science technology engineering and mathematics.

Despite the significance of science and mathematics toward the nation, yet, public presentation of secondary school students in Nigeria was not encouraging, particularly the female students. As confirmed by Eguridu (2014) that, more than 70% of candidates that took for 2014 November/December West African Senior Secondary School Certificate Examination (WASSCE) unsuccessful to get five credits in Mathematics and English including science subjects. This could be due to the inadequacy in term of how teachers viewed the nature and curriculum of scientific discipline and Mathematics Education. Which leads to a degree of contention in the Philosophical urgency in many modern-day Curriculum (Ugwu et al. 2011). Also, Abur et al., (2013) point out that, the technological backwardness of Nigeria seems to stay as one of the most reliable indications of the shortcomings of the nation's educational system since the Nigerian government is experiencing many challenges in succeeding the goal of strengthening science and technology. This could be a reason why Aremu (2014) call for the Nigerian government without Delay imposing a state of emergency on the whole educational system.

Gender is an essential factor in Nigerian secondary school education (Abdu-Raheem 2012). However, the disparity has been established at almost all levels of education among male and

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female students, in this regards Gusau et al (2013) point out that the particular portion of male and female students especially in science and mathematics at higher educational institution, compared to the southern region, statistically northern parts were very low. Especially female, that there is the need to find out for the gender in balance.

Thus. The call was made by Odunaike et al. (2013) that, Nigeria is in need of additional females' scientists and technologists in making a decision. Because it would empower them to regulate the means of technological investigation and encourage policies which can favour female species since the gender disparity for female once in respect to the opportunity to education particularly at secondary school level is established (Erinosho, 1997). To this regard, UNESCO (1999) revealed that Education for All Goal 5 (Five) demands that gender differences be eliminated in both elementary and secondary school by the year 2005. Moreover, attaining gender equality in education by 2015, ensuring girls have full, equitable access to and success in a high-quality basic education, and in Nigeria, policies and laws have been ordained to support women's education (James 2014). Evidence indicated a gender disparity in science and maths in Nigeria, for instance, Ameh (2014) revealed a decline of performance for math and science students, both male and female, between 2011 and 2014.as 38.93%; 45.52%; 36.57% and 31.28 %. Respectively, Again, Ezenwa, (2005) revealed that the students' performance in Nigeria as regards to science and mathematics subjects is less than forty (40%) per cent of the students passed West Africa Examination Council (WAEC2011) Examination at the credit level.

The Federal Government of Nigeria has implemented laws designed to promote women's education in an attempt to solve gender inequality and the problems in science and technology. (James 2014), one of these policies is the Nigerian National Policy on Science, Technology and Innovation ST&I (2012). Which has a specific target as "empowering women in the utilization of ST&I for economic development (p32)? Likewise, in 2004 the federal ministry of science and technology revealed that, there has been attention on the focal point in Nigeria on the problem dwelling enrolment, interest and achievement in science, mathematics and technology, among which are vision statement of this policy that stated "Nigeria will have a sizable, robust, diverse, sustainable, and competitive economy by 2020 that can responsibly utilize its natural resources and effectively harness the talents and energies of its people to ensure a high standard of living and high quality of life for its residents. " (p, 27). Besides, since the year 2005, Nigeria became more aware and began to address the rising concern about having a vanguard of investigation in science and technology (National Research Council, 2011).

In connection with the above, this paper, therefore, emphasizes the research fields of science, mathematics and science mathematics education on gender disparity which was carried out by researchers for eight years in Nigeria. The purpose of this paper is to provide a general summary of science and mathematics education on gender which has been conducted in Nigeria and to evaluate and deliberate the situation and find the potentials for future development. Besides, the paper targets to explore the participant type, study design, data collection technique, and, lastly, an overview of the key conclusions for the assessed scientific and mathematical publications on gender inequality. However, it is apparent that some restrictions were found which could give other researchers opportunities to carry out research that will focus on male or female students in the area of science in addition mathematics education. Thus, this paper engaged in as meta-analysis which is considered more appropriate than a traditional narrative review. Meta-analysis

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provides authentic reliable and open means to embraces existing results, even though, meta-analysis is suitable in reviewing, evaluating as well as synthesising the actual realistic outcomes of the study (Stanley, 2001 and Allen, et al., 2004).

Methodology

This study traced research conducted on gender difference in science and mathematics education using ProQuest as the primary scanning bibliographic database. The reason for choosing researches conducted on gender-wise is there are issues on gender disparity in Nigeria which need to be equipped. The chance to make use of ProQuest has been signed at ease the emergence of web-based services, such as those offered by Tylor and Francis, Science Direct, Web of Science, Emerald, Google Scholar, Scopus TM, Springer, and Education Resources Information Centre (ERIC). To find published papers on gender inequality in science, math, and science education in Nigeria, all the databases were searched.

The key search terms used in screening the articles are a gender difference in science and mathematics education. Gender difference in science education. Gender difference in mathematics education, male and female performance in science and mathematics education, comparison of male and female academics achievement in science and mathematics education. Challenges of male and female students in science and mathematics as well as challenges of students studying science also with mathematics both male and female in Nigeria. However, the articles were examined also analysed according to the division of science such as chemistry, physics and biology, while in the field of mathematics it has been categorised into statistics and mathematics, and gender, divided into male and female and gender, all this was done to avoid bias when searching, screening or analysing the articles. These key terms are regarded as presentative of the search conducted in the databases concerning the objectives and definition of science and mathematics education.

The search was limited to a total of 50 published articles from 2008 to 2015 in Nigeria on science and mathematics education. Even though, Nigeria is far behind in publishing the articles in the higher-impact factor journals, however, we tried to retrieved articles from recognised journals such as Asian Journal of Education and e-Learning, Multicultural Education & Technology Journal, Procedia Social and Behavioural Sciences, Educational The International Journal of Mathematical Education in Science and Technology, Research and Review, and European Scientific Journal. What was analysed from the articles are the titles, field of research, abstracts, samples, data and data collection, research design and participants and findings conducted at different levels of education, therefore this paper offers the empirical results involving the temporal distribution of gender difference in science and mathematics in Nigeria.

The research findings were interpreted using the narrative review in support of an empirical statistic. Humphery (2011), stated that, the abundant of qualitative review papers are great because they do not just review the literature, but they also organize it, they frame it, besides they deliver a way forward for the future, and the findings of meta-analysis should be positioned in the research context, and interpret findings in a meaningful approach. It was not only aimed at given the overall success of individuals concerning Nigerian research. However, but this narrative review

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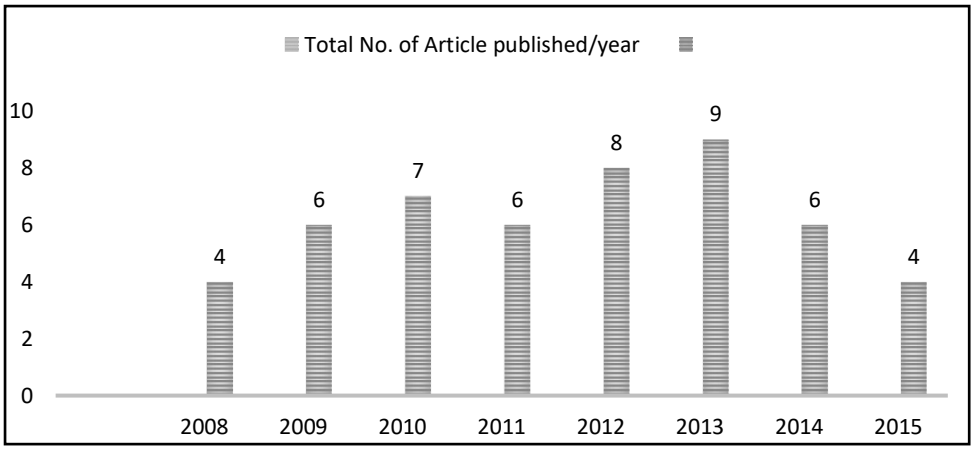
will also be used as a means for providing broad future research and development of Nigerian science and mathematics education in term of gender.

Results

The findings supply a descriptive analysis of the science and mathematics education gender wise research field; it indicated that there is a research base for the gender difference in science and mathematics education in Nigeria. Corresponding to this, these findings sum-up the scope of research being conducted in the area by scholars in the field of gender difference in science and mathematics education and where the research is being published. The findings are systematised into six parts:

i) Chronological distribution
ii) Research areas
iii) Participant type
iv) Research design
v) Data collection method
vi) Data collecting sources

Figure 1. Distribution of reviewed articles from 2008 to 2015



Chronological Distribution of Research Studies in Gender Difference in Science and Mathematics Education

The above figure (figure 1) shows the distribution of the examined articles published. A total number of articles analysed is 51 for eight years. The results indicated that the diffusion of science and mathematics (S&M) education articles published varied from 2008 to 2010, since, as at 2008 a total number of 4 articles were reviewed, while, in 2009 increased to 6 and fluctuated to 7 articles in 20010. There was an increase in the trend of articles from 2011 to 2013, ranges from 80% to 90% increase. Also, the reviewed articles were decreased to 60% in the following year, and drop down again to 60% in 2015. It has also examined that, the highest number of articles reviewed was in 2013 with 10% as a total increase. Even though 2013 has the highest published articles since 2008, only four articles were retrieved in 2008 and 2015 about the gender difference in science and mathematics.

Research Areas Considered in Science, Mathematics and Science and Mathematics

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The total number of research areas involved was 14 which were sum-up from the 51 articles reviewed. Nearly articles possess more than one area whiles others do not have anyone. The total number of articles analysed throughout were 63, however, in the domains of mathematics and science (S&M) education, mathematics education has the highest number of articles published with a total of 65 issues, this is followed by science education with a total of 26 issues and lastly, science and mathematics education with only 3 issues. The description of the frequency of these research areas in the field of science and mathematics education can be seen in Table 1 below:

Table 1: Research Areas in Nigerian Science and Mathematics Education

No.	Field of Research	Sci.	Maths	Sci. & Maths	Total
1	Teaching and learning	6	3	0	9
2	Curriculum	0	0	0	0
3	Instruction (Inst.)	1	2	0	3
4	Culture	0	0	0	0
5	Male Female	1	0	0	1
6	Assessment	2	2	0	4
7	Perception	1	1	1	3
8	Motivation &Attitude	3	5	0	8
9	Problem solving	1	0	0	1
10	Interest	1	1	0	2
11	Anxiety	0	0	0	0
12	Challenges	1	0	0	1
13	Achievement/performance	9	19	2	30
14	Others	1	2	0	3
	Total	**27**	**35**	**3**	**65**

For eight years, achievement and performance research area have the highest number used in all the fields with 19%, followed by teaching and learning with 6%. Also, the three areas emerged with the same percentages in all the fields; the areas are instruction, assessment and other research areas with 2%. The teaching and learning trends of both male and female students in Nigerian schools demonstrated the significance placed on students' accomplishments in the domains of science and mathematics regarding gender differences. Though, integration of the science and mathematics was not given priority, as shown only two issues out of 30 in the achievement and or performance, despite the importance of integrating this two (science and mathematics) fields together.

Another area of priority given in Nigeria in the areas of science in addition mathematics on gender difference is Motivation and attitude. Particularly in the field of mathematics, however, mathematics education recorded the highest number of issues reviewed for eight years with a total of 34 areas of research, followed by mathematics education, while, only three areas of research were found in the field of science and mathematics education. Also, the result from the table below shows that there is a gender difference in term of research in the fields of science and mathematics education, and the area of anxiety has not been given much attention as zero was found in all the fields. However, interest was slightly considered in science and mathematics education fields but, not in the integration of science and mathematics education. On the other

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hand, the perception and assessment too were considered necessary in the published articles in both the scientific and mathematical domains

Type of Participant

The type of participant considered in the analysis of the published articles from 2008-2015 are eight participants in all the fields of science and mathematics education, the description of the participants and the samples used are shown in table 2. Out of the total number of participant articles that used both male and female students have the highest percentage with 45 articles. Out of which mathematics education has 23%, followed by science education, however, experts Which include primary and secondary teachers, lecturers as well as experts in the fields of science and education has the second order in the number of participants from the articles reviewed. From all the 51 articles reviewed and analysed the participants, which were not involved in the research are: administrators; parents and male students as well as adults.

Besides, the trend indicates that female students and using documents in the study in the fields of science and mathematics education were not given priority. Since is only 1% of the articles were found to consider these participants, Amazingly, most of the researchers prepared for us only students, instead of considering the importance of involving parents and administrators as participants in the study, very few involved experts and female students in their research.

Table 2: Type of Participant in Science and Mathematics Education in Nigeria

No.	Research Area	Sci.	Maths	Sci. & Math	Total
1.	Qualitative research	0	0	0	0
2.	Parent	0	0	0	0
3.	Male Student	0	0	0	0
4.	Female Students	1	0	0	1
5.	Male & Female Students	20	24	1	45
6	Expert Primary teachers; Lecturer	0	0	0	0
7	Adults	0	0	0	0
	Total	**1**	**0**	**0**	**1**

Methodological Design Engaged

The trend of the methodological approaches used in Nigeria in both the scientific and mathematical domains from 2008 to 2015 indicates that there are three research design used, which includes qualitative, quantitative and mixed methods. However, developmental research was not used as a type of research methodology in all the fields, and only one mixed method type of research was employed for eight years. The table below indicates the total number research method design used by local research in Nigeria in both the scientific and mathematical domains.

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Throughout publication from 2008 to 2015, a total of 48 research design were used by the local researchers.

Table 3: Research Design in Nigerian Science and Mathematics Education

No.	Research Design	Sci.	Maths	Sci. & Math	Total
1.	Qualitative study	2	1	0	3
2.	Quantitative study	19	22	3	44
3.	Mixed method	1	0	0	1
4.	Developmental Research	0	0	0	0
5.	Others	0	0	0	0
Total number of Research		**22**	**23**	**3**	**48**

It is evident from Table 3 above that majority of the researchers in Nigeria employed Quantitative research design with 92% in all the fields. Despite the abundance of the population of people in Nigeria the local research in the field of science and mathematics prepared to be employed Quantitative method design instead of using qualitative methods and developmental method to triangulate their findings. Mathematics education on has the highest number of the quantitative research design followed by science education, but, out of the 92% quantitative research design employed throughout the period of publication, only 7% quantitative research design was used in the fields of science and mathematics but has not being used in the integrated science and mathematics fields.

The researchers also examined that, mixed method research design has not been given attention in almost all the fields since only science education articles were found to use only one mixed method design though out despite the importance of mixing two methods (qualitative and quantitative) in the field of social science research. Finally, none of the fields was found to employ developmental research method, although developmental research is the best type of research to be used when designing to evaluate educational programs. It is also interesting that the study demonstrated the trend of research design of Nigerian science besides mathematics education conducted on gender from 2008 to 2015 has been analysed and can be seen in Figure 2. distribution which was based on the years of publication of the articles in the fields of science and mathematics education. Thus, the trend shows that local Nigerian researchers are good enough for employing statistical analysis and there has been a shift in the quantitative research design method from 2008 to 2013 but declined by 2014.

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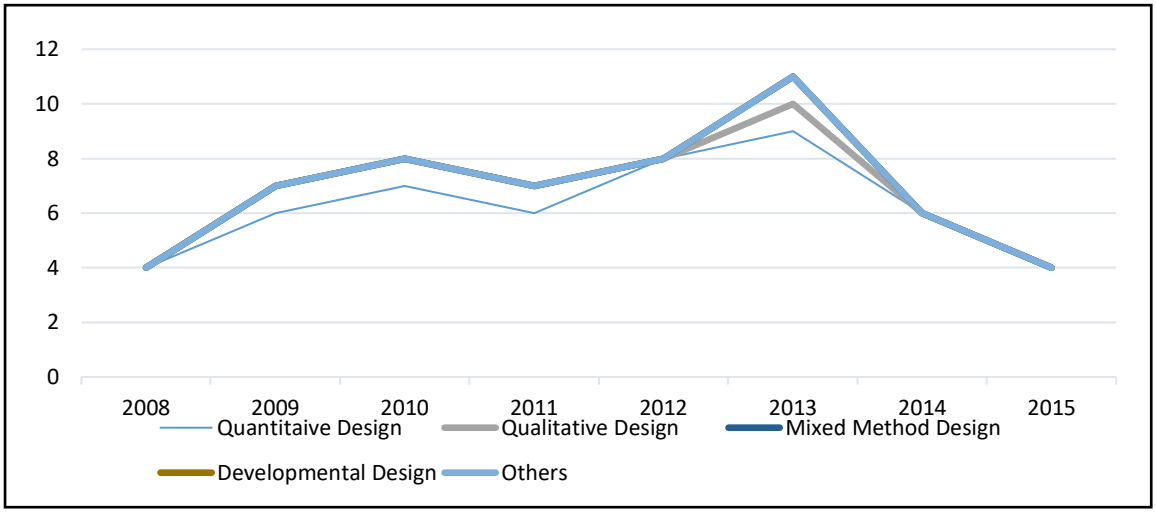

Figure 2. Distribution of Research Design from 2008 to 2015

Another critical area we analysed in this study is different sources of data employed by the researchers in the fields of science and mathematics education in Nigeria. It is clear from the Table 4 and Figure 4 that, the majority of the local researchers in Nigeria used primary data as their sources of information in their findings, 92% of the data sources from 2008 to 2015, was primary data, while, only 8% of the published articles were found to used secondary data as their source. No, an article was found to employ secondary data source in the field of integrated science and mathematics.

Table 4: Types of Data Sources Used in Nigerian Science and Mathematics Education

S/N	Research Are	Sci.	Maths	Sci. & Maths	Total
1	Primary Data	22	22	3	48
2	Secondary Data	2	2	0	4
3	Primary and Secondary Data	1	0	0	1
Total		**25**	**24**	**3**	**52**

In aadtion, the below Figure also demonstrate the trend:

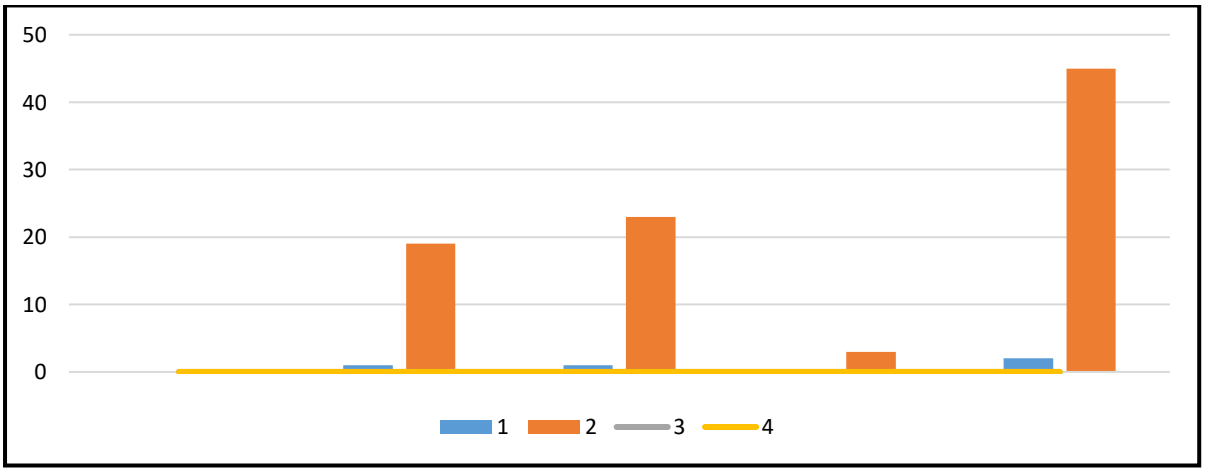

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Figure 4. Type of Data Sources in Science and Mathematics Education in Nigeria

Despite the importance of using both primary and secondary sources of data in the educational domains of science and mathematics, the local Nigerian researchers in the fields of science and mathematics were found to neglect and not consider the use of primary and secondary data souse in their research. Also, only 1 article in the field of science education that used both primary and secondary data as its source. This study did not limit its findings only on research areas, type of participants, research design and sources of data, but also considered the method of data collection paramount in the fields of science and mathematics education. Table 5 and Figure 5 therefore, demonstrates the methods used in data collection from the reviewed articles from 2008 to 2015. A total of 4 methods of data collection were used in all the fields.

Table. 5: Methods of Sources of Data Collection in Science and Mathematics Education in Nigeria

No,	Method	Sci.	Maths	Sci. & Maths	Total
1	Conducting Interview	1	1	0	2
2	Conducting Interview and using document	19	23	3	45
3	Administration of Questionnaire	0	0	0	0
4	4Conducting Interview & Administration of Questionnaire	0	0	0	0
5	Using Delphi technique	0	0	0	0
6	Using Documents	2	0	0	2
7	Observation	0	0	0	0
	Total	**23**	**24**	**3**	**50**

Table 5 above and Figure 5 below indicated that the administration of the questionnaire was the most prominent method of data collection used for the whole fields because 90% of the articles published used this method of data collection, mathematics education researchers used the questionnaire more than science education, because. While mathematics education local researchers in Nigeria used 51% of the questionnaire as a method of collecting data, science education employed 42 % whereas science and mathematics education employed only 7% as their method of data collection. However, only 2% of the published articles found to use the interview as their source of data collection in the educational domains of science and mathematics. Moreover, another 2% of the researchers employed documents as their sources of data collection whereas, only one published article used interview and documents in the field of science education.

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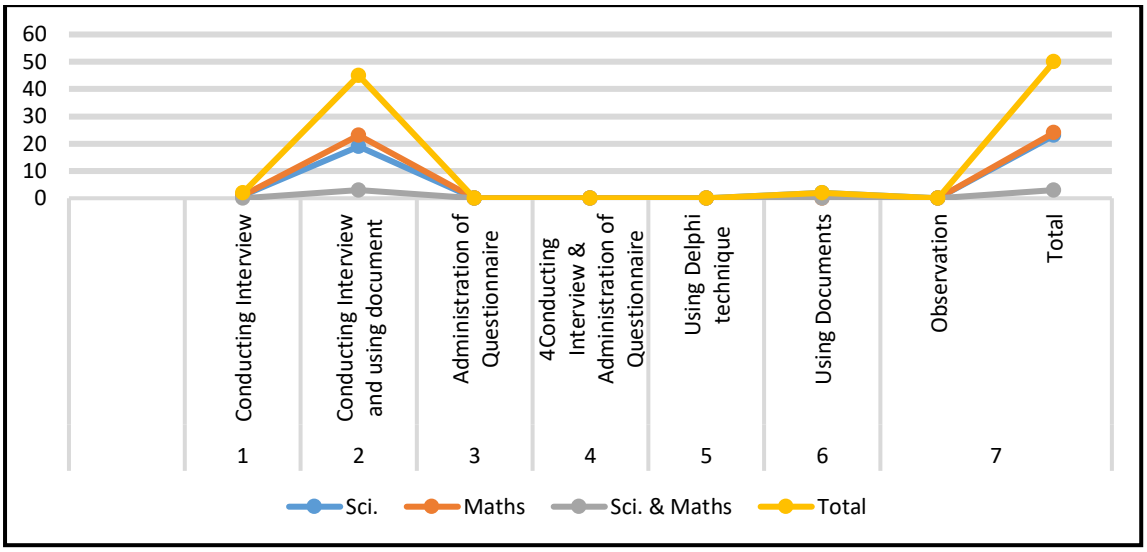

Figure 5. Methods of Sources of Data Collection in Science and Mathematics Education in Nigeria

Furthermore, Delphi technique as a means of gathering data from a different expert, found to be more reliable in as a source of data collection was not used in all the fields. Instead, they gave more priority to the questionnaire, which mostly administered to the group of students. Consequently, conducting an interview, using questionnaire and observation are essential elements of data collection in the field of social science research, particularly if the researcher wants to explore his study make life as well as in-depth investigation. However, the Nigerian local research in the fields of science education and mathematics education based on the articles retrieved and reviewed from 2008 t02015 did not use these two essential instruments as their sources of data collection.

Discussion

It has been established that science and mathematics are also considered as the life for technological advancement Ekon et al. (2014), it is, therefore, apparent that without proper foundation in secondary school science and mathematics no nation can achieve its scientific and technological advancement in this area (Ekwueme and Meremikwu 2013). Incorporating technology and engineering in this fields could indicate the role played by science education in the technological advancement of the 21st century in the global perspectives, as indicated by Jayarajah et al. (2014). That, Despite how much technology and engineering goods have impacted daily life, STEM education consists solely of science and math Jayarajah et al. (2014), this will make students be problem solvers, creatives and be able to make innovations.

About research areas in Nigeria science and mathematics education, convincing evidence indicated that there is the apparent dominance of studies on mathematics education to other disciplines of science education and Education in science and mathematics in the Nigerian context. The significance of researching the field of mathematics education on gender-wise is unavoidable. Still, the main focus of the reviewed research was on the male and female student's achievements and their performances in the teaching and learning concerning science and mathematics education. Though, the achievement and performance of student's attention were not given to curriculum and instruction and assessment. There is the need for science and mathematics teachers to use

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effective strategies in their instruction to foster students' interest in science and mathematics particularly in female students as well as infuse in them a sense of efficiency about the perception of their science and mathematics abilities (Nyarko 2013). Therefore, more research on curriculum that will integrate both science and mathematics in the area of female students interest and anxiety is required, because the areas were not thoroughly researched in Nigeria.

In Nigeria, the incorporation of science and mathematics has been initiated since and created an avenue for motivating students to learn science and mathematics concepts and figure which could assist them to perform excellently in their high institution level to study STEM fields. To this regard, Koirala & Bowman (2003) and Frykholm & Glasson, (2005) demonstrated that integrating curriculum of different areas can present students with more honest providing meaningful educational opportunities as opposed to the fragmented ideas offered in curricula for individual subjects.. Hence, there is the need for designing a STEM and science and mathematics education programmes effectively by promoting gender sensitive, sociocultural, policies and curriculum that will increase female scientists and technologist (UNESCO 2000, Odunaike et al. (2013).

On the other hand, this study found that most of the researchers in Nigeria gave more priority to students, instead of considering the importance of incorporating the experts, and parents in their study, since Lack of parental reinforcement and expectation discourages girls' interest in science and maths (Davis-Kean, 2007). Moreover, the use of documents can also stimulate the effectiveness of the designing programs that could increase students interest in learning science and mathematics education, but these elements were not given much emphasis. However, despite the importance of gender equity, which was given more priority, studies should have been conducted to the individual sex either male or female, particularly female students because Over the past 20 years, girls in particular have continued to struggle with low confidence, and this does not seem to have changed (Burke & Mattis, 2007). However, from the findings of the published articles analysed, it has been established that gender difference exists in relation to students' achievement, also most of the researchers show that female students perform low compared to their male counterparts, very few found no significant difference between male and female students achievement on science and mathematics education. Therefore, there is the need for more research in Nigeria that will motive and arose the student's interest to perform excellently mainly female in the fields of science and mathematics.

It is essential to use a quantitative approach as a design in the educational domains of science and mathematics, most of the researches conducted in Nigeria used Quantitative research as their research design, through a qualitative approach and mixed methods provides full and authentic and in-depth information to the researchers. Since, mixed methods research is a methodology toward inquiry concerning gathering together qualitative and quantitative data, interpreting the two forms of information, and using divergent designs that may perhaps comprise philosophical assumptions and theoretical framework (Creswell, 2014). Furthermore, the systematic study of designing, implementing, and assessing instructional programs is referred to as developmental research in the field of educational research. (Seels and Richey 1994), developmental research method was not given attention regarding the designing a teaching and learning environment that could enhance students' interest. Particularly female in learning science and mathematics using developmental research method, it is, therefore, significant to carry out research using developmental research as a design approach.

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The results of this review indicate that in the educational domains of science and mathematicsprimary data was the frequent data used in the studies carried out in Nigeria. The primary data is considered the most reliable data to be used in getting authentic information on the participants of the study as stated by Privitera (2014) that the source of an idea or research is called primary source. However, very few researchers employed secondary data in the fields of science and mathematics education, while, only in the field of science education researchers make use of both primary and secondary data despite the importance of using this two types of data more than a single one. In term of the sources of data collection in Nigeria, the majority of the researchers in the fields of science and mathematics education administered questionnaire in collecting their data. Despite the facts that, questionnaire provides adequate information of the respondents, interview too can provide life and explore the real and authentic information on the respondents, but very few use conduct interview and using documents in their data collection. Another way to gather information from various experts in the field is through the use of Delphi methodologies.. As stated by Abdalrob and Daniel (2013) that, Delphi technique as a combination of processes used to survey and gather the experts' opinions on a specific subject. This technique was not used as a means of sourcing the data. It is, therefore, essential to carry new research in Nigeria in the fields of science and mathematics education that will use both primary and secondary data as well as conducting an interview, observation and use Delphi techniques, which were neglected by the local Nigerian researchers in the fields of science and mathematics education.

Conclusion

The fields of study in science and math education on gender difference in Nigeria has been researched, yet, little research has been carried out to determine the effects of exciting science and mathematics education approach on students' interest anxiety, and their perception on this field. Another area of importance is involving parents in researching the field of science education and mathematics education. quantitative research design method using questionnaires as a source of primary data were widely used by the local Nigerian researchers in the educational domains of science and mathematics. However, there is a dire need for more research by Nigerian researchers in the fields of science and mathematics education, since technology and engineering depend on the knowledge of mathematics and science instruction. This can produce innovators; critical thinkers graduate mainly female in the STEM fields for the economic and technological growth of Nigeria and world at large. It is imperative that the literature and practices related to scientific education do not supersede the impact of researchers and specialists in mathematics education.

Additionally, the critical examination for the presence of publication and related biases which was established to be essential ingredients part of meta-analysis studies as well as systematics review Critical by Egger, et al. (1997) was used in filtering the published articles from unpublished once. Precisely, this paper limits its analysis to only published articles in the educational domains of science and mathematics in Nigeria. This is due to the reason that, using published results and non-peer reviewed data can introduce biases which can lead to the problem in the analysis (Smith and Egger 1998). Therefore, in this paper, we completely limited our study on retrieved and summarises the previously published articles on science and mathematics education on gender difference.

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Recommendations

The study's findings led to the following suggestions being made: When conducting research in the fields of science and mathematics, more attention should be paid to the areas of developmental research design; types of participants in science and mathematics education, such as parents, male students, lecturers, and adults, should be taken into consideration in future research; qualitative, mixed mode, and developmental approaches need to be used in the subsequent studies;

Moreover, secondary data and mixed data are the types of data sources that need to be used but were not fully investigated by previous researchers. The methods of collecting data in science and mathematics education that were not fully investigated by previous researchers included the use of questionnaires, conducting interviews using the Delphi technique, and making observations that were anticipated to be used in future studies.

References

Abdalrob, M.M.A., & Daniel. E.G.S. (2013). The Delphi technique in identifying learning Objectives for the Development of Science Technology and Society Modules for Palestinian Ninth Grade Science Curriculum. *International Journal of Science Education,* 35 (15), 2538-2558.

Abdullahi., KolapoSakiru O, Abdulrahman, A.S APaul, G.T & Olutokunbo, A.S. (2013) Globalization and the challenges of National Development in Nigeria, *International Journal of Humanities and Social Science Invention, 2 (5) 57-63.*

Abdu-Raheem, B. (2012). Gender differences and students' academic achievement and retention in social studies among junior secondary schools in Ekiti State. *European Journal of Educational Studies, 4*(1).

Abur, C. C., Danyi, C. J., & Torruam, J. T. (2013). The effect of low participation of female in science and technology in Nigeria. *International Journal of Marketing and Technology, 3*(1), 108-115.

Allen, T. D., Eby, L. T., Poteet, M. L., Lentz, E., & Lima, L. (2004). Career benefits associated with mentoring for protégés: a meta-analysis. *Journal of applied psychology, 89*(1), 127.

Ameh, C. (2014). Students Performance drops as WAEC releases 2014 results. *Daily Post Newspaper, August, 11.*

Aremu, O.(2014) Mass failure in WAEC: Dons call for a state of emergency in the sector, August 21 2014. http://www.vanguardngr.com/2014/08/mass-failure-waec-dons-call-state-emergency-

Burke, R.J., & Mattis, M.C. (2007). Women and minorities in science, technology, engineering and mathematics: Upping the numbers. Northampton, NJ: Edward Elgar Publishing, Inc.

Creswell, J.W. (2014) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*, (4th Edition). Thousand Oaks, C.A: Sage.

Davis-Kean, P. (2007). How dads influence their daughters' interest in math. University of Michigan Institute for Social Research http://www.sciencedaily.com

Eguridu, C. (2014). WAEC records another mass failure, withholds 145,795 results. The Guardian Newspaper of 12th August, p.1. Retrieved from www.ngrguardiannews.com

ISSN: 2518-2951 https://doi.org/10.59568/AMJD-2023-12-3-18 African Multidisciplinary Journal of Development (AMJD)

Ekon, E. E., Ekwueme, C. O., & Meremikwu, A. (2014). Effect of Five Phases of Constructivist Instructional Model (CIM) on Junior Secondary School Two (JSS 2) Students' Cognitive Achievement and Interest in Basic Science and Mathematics in Cross River State of Nigeria. *Education, 4*(3), 74-77.

Egger, M., Smith, G. D., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *Bmj, 315*(7109), 629-634.

Ekwueme, C. O., Meremikwu, A., & Kalu, N. (2013). The National Mathematics Curriculum for BEP (Basic Education Programme) and the MDG (Millennium Development Goals) for Mathematics Teachers in Nigeria: Teachers' Perception and Readiness. *Online Submission, 3*(3), 162-171.

Erinosho, S. Y. (1997). The making of Nigerian women scientists and technologists. *Journal of Career Development, 24*(1), 71-80.

Ezenwa, V.I. (2005). Concept mapping: A veritable tool in science education. The seventh inaugural lecture series of the Federal University of Technology, Minna.

Federal Ministry of Science and Technology (2012). Science, Technology and Innovation Policy Presidential Statement on the New National Policy on Science, Technology and Innovation,

Frykholm, J., & Glasson, G. (2005). Connecting science and mathematics instruction: Pedagogical context knowledge for teachers. School Science and Mathematics, 105(3), 127–141.

Furner, J.., & Kumar, D. D. (2007). The mathematics and science integration argument: A stand for teacher education. *Eurasia Journal of Mathematics, Science & Technology Education, 3*(3), 185-189.

Gusau, A.M., Basir, S.A., and Muhammad Y. (2013). Public Perception on Muslim Female Education in Zamfara State, Nigeria. *Kabai Journal of Multidisciplinary Studies*. (1) 189-203.

Harel, G. (2008). What is mathematics? A pedagogical answer to a philosophical question. *Proof and other dilemmas: Mathematics and philosophy*, 265-290.

Humphrey, S. E. (2011). What does a great meta-analysis look like? *Organizational Psychology Review, 1*(2), 99-103.

Jayarajah, K., Saat, R.M. & Abdul Rauf, R., A. (2014). A Review of Science, Technology, Engineering & Mathematics (STEM) Education Research from 1999-2013: A Malaysian, *Eurasia Journal of Science, Technology, Engineering & Mathematics*

James S.E (2014) Education in the Middle Years/Junior Secondary School in USA And Nigeria: A Comparative Analysis, *Journal of Sustainable Development in Africa,* 16, (2) Clarion University of Pennsylvania, Clarion, Pennsylvania

Koirala, H. P., & Browman, J. K. (2003). Preparing middle level preservice teachers to integrate mathematics and science: Problems and possibilities. School Science and Mathematics, 145(10), 145–154.

Kola, A. J. (2013). Importance of Science Education to National Development and Problems Militating Against Its Development. *American Journal of Educational Research, 1*(7), 225-229. Retrieved from http://pubs.sciepub.com/education/1/7/2

Morris, C. G. (1992). *Academic press dictionary of science and technology*: Gulf Professional Publishing.

Nyarko, K., Kwarteng, A.B., Akakpo, G.M., Boateng, R., & Adjekum, N. (2013), The Effect of Corporal Punishment and Math Anxiety On Math Performance Among Junior High

School Students in Ghana, *Ife Psychologies,* 21(2).

National Research Council. (2011). Successful K-12 STEM education: Identifying effective Approaches in science, technology, engineering, and mathematics. Washington, DC: National Academy Press.

Odunaike K. O., & Ijaduola K. O. (2013) Empirical analysis of Teachers' Gender and Secondary School Students' Academic Performance *Asian Economic and Financial Review, 2013,*

Orton, T., & Roper, T. (2000). Science and mathematics: A relationship in need of counselling?

Odunaike K. O., & Ijaduola K. O. (2013) Empirical analysis of teachers' gender and secondary school students' Academic Performance *Asian Economic and Financial Review, 2013,*

Priviter, G.J. (2014) Research Methods for the Behavioural Sciences. SAGE Publication, Inc.

Ríordáin, M. N., Johnston, J., & Walshe, G. (2015). Making mathematics and science integration happen: key aspects of practice. *International Journal of Mathematical Education in Science and Technology*, 1-23.

Smith, G. D., & Egger, M. (1998). Meta-analysis: unresolved issues and future developments. *Bmj, 316*(7126), 221-225.

Stanley, T. D. (2001). Wheat from chaff: Meta-analysis as quantitative literature review. *The Journal of Economic Perspectives, 15*(3), 131-150.

Seels, B., & Richey, R. (1994) Instructional Technology: The Definition and Domains of the Field. Washinton, DC: Association for Educational Communication and Technology

Ugwu, D.U., Nnokocha, C.O. and Ozioko, S.U. (2011) Position of the teacher in the reform of STEM education through indigenous knowledge system: challenges and Prospects. *The Nigerian Journal of Research and Production 19 (1).*

UNESCO. (2000). EFA, Global Monitoring Report. Paris: Author.

UNESCO (2014). Topic B "STEM Education", Harvard World Model United, Woolsy, DCA.

UNESCO (1999) Education for All Goals. Retrieved from http://www.unesco.org/new/en/education/themes/leading-the internationalagenda/education-

WAEC. (2011) West African Examination Council. Nigerian secondary school results

Wilhelm, J. A, Walters, K.L. (2006). Preservice mathematics teachers become full participants in inquiry investigations. *Int. J Math Educ. Sci. Technol*. 200637:793–804.

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APPENDIX 1

REVIEWED ARTICLES OF SCIENCE EDUCATION AND MATHEMATICS EDUCATION AND GENNDER IN NIGERIA FROM 2008 TO 2015

Author/Date/year	Field	Research areas	Type of participant	Method/design	Sources of Data	Method of Data Collection	Major Findings
Abur, Cyprian Clement, Danyi, Chris. J Torruam, Japheth Terande, 2013	Sci.	Achieve	M & F Students	Qnty	Prim. D	Questionnaire	Even though female access to education is generally low compared to the male counterpart, their participation in science education is even lower. it could be seen that there is a consistently wide margin between female and male students in the technical colleges in all the zones of the Federation
K. A. Omotayo1, J. O. Adedayo and M. F. Ayeni 2014	Sci	M&F. Instruction	students. Teachers	Qnty	Prim. D	Questionnaire	The findings demonstrated that: (1) Students in the experimental group outperformed their peers in the control group; and (2) Female students outperformed their male counterparts in the experimental group on tasks.
Omotayo K. A,. Adedayo J. O and. Ayeni M. F 2014	Sci.	Performance	M & F stdts	Qnty	Prim. D	Questionnaire	Students in the experimental group outperformed students in the control group. Specifically, female students in the experimental group outperformed male students on tasks.
Aderemi, H. O.1, Hassan, O. M.1, Siyanbola, W. O.1, Taiwo, K.2013	Sci.	Motion & perfect	M&F, Stdts	Quli& Qnty	Prim.d &Secd. D	Document & Interview	The study's findings included data on enrollment and graduation rates, as well as performance, motivating factors, and girls' career development.
G.O. Esiobu 2011	Sci.	M&F, leaning.	Gender students	Qnty	Prim. D	Questionnaire	The study offers a distinctive perspective on gender equity and cooperative learning in Lagos, Nigeria.

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Mudasiru Olalere YUSUF, Adedeji Olufemi AFOLABI 2010	Sci.	Teaching & Leng	M&F Stdts	Qnty	Prim. D	Questionnaire	The results of the study demonstrated that students exposed to CAI, whether individually or cooperatively, performed better than their counterparts exposed to traditional classroom instruction. There was no statistically significant difference in the performance of male and female students exposed to CAI in either setting.
Oludipe, Daniel I 2012	Sci.	Achiv. M&F	M&F students	Quanti ty	Prim. D	Questionnaire	Male and female students' academic performance did not differ significantly at the pretest, posttest, or delayed posttest levels, respectively.
Afuwape Moses O*.1 and Oludipe Daniel 2008	Sci.	Ach.	Gender stdts	Quanti ty	Prim.D	Questionnaire	There was no statistically significant difference between the male and female students used in the study in terms of their academic performance in integrated science. Male students had higher mean scores than female students for each year, as can be seen, but the impact size was tiny.
Christiana I. Oriahi 1, P.O. Uhumuavbi 2 and L.I. Aguele 2010	Sci.	Interest	M&F stdts	Quality	Prim.D	Questionnaire	2. In a higher education institution, more boys than girls choose to study technology courses. More girls opt to study science education courses.
Olasehinde, Kayode John & Olatoye, Rafiu Ademola 2014	Sci.	Leaning	M&f students	Qnty	Prim. D	Questionnaire	Overall scientific achievement did not significantly differ between male and female students.
N.S. OKOYE 2009	Sci	Achieve/performance	Gender	Quanti ty	Prim D	Questionnaire	The study's findings indicate that performance in Integrated Science is significantly impacted by both gender and school location.
Obafemi, Deborah.T.A. 2015	Sci.	Teaching	M&f students	Qnty	Prim D	Questionnaire	The study's findings indicate that gender and school location have a substantial impact on integrated science achievement.

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TIM. E. AGBOGHOROMA& E. O. OYOVWI 2015	Sci	Assess/ achieve & perceptio n	M&f students	Qnty	Prim. D	Questionn aire	The findings indicated that while students thought biology's most challenging themes to be related to Hereditary, Genetics, and Ecology, gender (male and female sex) and school location (urban and rural) had little influence on the subjects.
Bruno Uchenna Onyekuru 2015	Sci.	Learning	M&F stdts	Qnty	Prim. D	Questionn aire	Gender and the field dependence-field independence cognitive styles were significantly correlated; field independent students performed better on mean in the sciences than field dependent students did, while field dependent students performed better on mean in the arts than field independent students;
Oluwatelure, Temitayo. Abayomi, 2015	Sci.	Achive	M&F stdts	Qnty	Prim.D	Questionn aire	Students' performance in science showed a notable gender disparity. Additionally, a notable variation in the attitudes of male and female pupils was noted.
Oludipe, Daniel I.2012	Sci.	Achiv	M&F stdts	Qnty	Prim. D	Questionn aire	There was also a noticeable distinction in the attitudes of male and female students.
Benson Adesina Adegoke 2012	Sci.	Learning	Gender stdts	Qnty	Prim.	Questionn aire	The attitudes of male and female pupils were also shown to differ significantly.
Fatoba Joseph Oba & Aladejana Alaba Lawrence 2014	Sci	Attempts	Gender Stdts	Quanti ty	Prim. D	Questionn aire	There was also a notable distinction between the attitudes of male and female students.
Stella N. Nwosu1, Rebecca U. Etiubon2 & Theresa M. Udofia 2014	Sci.	challenge s	F stdts	Qnty	Prior. D	Questionn aire	The findings show that the girls' main conceptual, psychological, and physical issues were related to mathematical ideas, their belief that science and technology topics are challenging, and their lack of study time.
Adodo Sunday O.1, Oyeniyi Joke D 2013	Sci	Perfect & Attends	M&F Stdts	Qnty	Prim D	Questionn aire	The findings showed that there is a substantial correlation between the characteristics of students (their study habits and attitude toward biology) and their academic

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							achievement in the subject in secondary education. However, there is no discernible difference in the academic achievement of male and female secondary school biology students.
Agboola, B.M. And Ofoegbu, F.I. 2010	Sci.	Assess	M&F stds	Qali	Second. D	Documents	There was a discrepancy in access between regional zones, and there are variations in male and female access nationwide. Furthermore, access varied throughout specialties.
Adeleke, 2008	Sci	perfect	M & F stdts	Qnty	Prim D	Questionnaire	There was no statistically significant difference between the two learning strategies performed by boys and girls. However, there was a significant difference between the two groups' performances when comparing the boys' and girls' performances. In other words, boys and girls performed equally in both cases.
Aderemi, H. O., Hassan, O. M.1, Siyanbola, W. O. and Taiwo, K.2 2013	Sci.	performance, motivational	Document	Quali	Second. D	Document	provided data on female enrollment and graduation rates, as well as information on their performance, motivating factors, and career advancement. In order to find cultural differences and similarities, the study compared data from Nigeria with that from the US, the UK, and other African nations..
James, Ajogbeje Oke; Folorunso, Alonge Micheal 2012	maths	Achiemt & assess	Gender stdts	Qnty	Prim. D	Questionnaire	Gender and socioeconomic level (SES) had no discernible effects on math achievement.
Bassey, P U; Isangedighi, A J; Okon, O Maureen; Idaka, Idaka E 2010	Maths	Achievement motivation	Gendersstdts	Quantity	Prim d	Questionnaire	In terms of gender, female students demonstrated a more positive attitude toward mathematics than did male students; there were notable differences between students who demonstrated high, moderate, and low performance motivation; also, students who exhibited positive attitudes outperformed those who did not.

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Emmanuel E. Achor1,* , Benjamin I. Imoko1 and John T Ajai 2010	Maths	Achiv. & Intres	M&F stdts	Qnty	Prim.d	Questionnaire	The attention and achievement of male and female students who were taught using games and simulations did not differ significantly.
Udousoro, U. J. 2011	maths	Perception & leang	M&f stdts	Qnty	Prim.d	Questionnaire	According to students' perceptions, fourteen (14) of the topics they had learned were deemed tough. At the 5% level of significance, there was a significant difference in the real learning problems between males and females.
Ibikunle O. Farajimakin (2010)	Mths	Achiv.	M&f stdts	Qnty	Prim, d	Questionnaire	Social and cultural factors continue to be a major factor in the large educational disparity between boys and girls in the northern part of Nigeria. Girls in the northern part of Nigeria attend basic schooling prior to being married off at a young age. As a result, widely accepted cultural beliefs are used to explain gender differences. Nonetheless, the populace of Eastern Nigeria
R. Bada Abubakar1, Bada, Ibrahim Adegboyega 2012	maths	Archive	M&f stdts	Qnty	Prim. D	Questionnaire	The null hypothesis was accepted, indicating that there was no discernible gender difference in the pupils' academic performance.
Kolawole E. B.1*, Oladosu C.T2. and Ajetunmobi O 2013	maths	Prob solving	M&f Stdts	Qnty	Prim d	Questionnaire	The findings demonstrated a substantial difference in the male and female student accomplishment across the four groups under investigation (with KPS having the highest achievement, mean score). Nonetheless, it was discovered that students' performance was unaffected by the sex {of pupil}. KPS technique
Agnes Ebi Maliki, Anthony Ntol Ngban*# and Julie E. Ibu*2009	maths	Achiv	M&f stdts	Qnty	Prim. D	Questionnaire	According to the paper, junior secondary school students' performance in mathematics Exam results for 2006 showed that male students outperformed female students, that students from rural schools outperformed those from urban

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							schools in the mathematics exam, and that students from private schools outperformed those from public schools.
S.A. Ifamuyiwa a & M.K. Akinsola 2014	Mths	Instrctn	Gender stdts	Qnty	Prim d	Questionn aire	The study's findings on the participants' attitudes toward mathematics revealed no discernible primary impacts of gender or locus of control.
Obidoa Mabel A., Michael Eskay & Onwubolu Catherine O. 2013	maths	Perfmce	Gender stdts	Quanti ty	Prim d	Questionn aire	Results indicate that while PAL improved the arithmetic performance of all male and female LAS (low achieving students), it had no effect on female HAS (high achieving students).
Adeneye O. A. Awofala, Abayomi A. Arigbabu, Awoyemi A. Awofala 2013	Maths	Attitudes	Gender students	Qnty	Prim d	Questionn aire	The categorization approach had no discernible main effect on the attitudes of the pupils toward mathematics. Although treatment and categorization style and gender and categorization style had substantial two-way interaction effects on students' attitudes toward mathematics, treatment and gender did not significantly interact with students' attitudes toward mathematics.
E. B. Kolawole 2008	Maths	Achiv & Leang	M&F stdts	Qnty	Prim d	Qustnnaire	The results showed that guys significantly outperformed girls in both learning styles, with cooperative learning being more effective than competitive learning.
Mojeed K. Akinsolaab* and Adeneye O.A. Awofalab 2009	maths	Instrn&ac hiv	Gender stdnts	Qnty	Prim.d	Qustnnaire	The findings demonstrated that there were notable variations between the male and female non-personalized groups, as well as the personalized and non-personalized groups, in terms of self-efficacy beliefs and word problem achievement in mathematics.

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Amos F. Awodeyi1, Ekemini T. Akpan2, Ifiok J.Udo3 2012	Maths	Achiv	Gende Stdnts	Qnty	Prim.d	Qustnnaire	Furthermore, there is no statistically significant correlation between a student's gender and their pre-algebra performance when using blended learning.
Sam William Bassey1, M. T. Joshua2and Alice E. Asim2 2008	Maths	Achiv.	Gender stsdts	Qunty	Prim d	Qustnnaire	Gender inequality in public schools, among low socioeconomic pupils, and throughout the sample was found by an independent t-test analysis of significance.
Amos Isiaka Gambari, 2Ahmed Tajudeen Shittu, and 3OLadipupo Abimbola Taiwo 2013	Maths	Learning & Acivt	Ma&f stdnts	Qnty	Prim.d	Qustnnaire	When pupils were exposed to CCI and ICI, there was no discernible difference between the male and female groups. In light of the discovery
M. A. Yusha'u 2013	Maths	Achie.	Gender stdnts	Qunty	Prim. D	Qustnnaire	The results showed that there was no gender difference in the experimental groups' academic performance at either the pre-test or post-test levels, and that the treatment provided to them was significantly effective for dyslexic and dyscalculic pupils.
TELLA, Adedeji 2011	Mths	Assess&Achiv.	M&f stdts	Qnty	Prim. D	Qustnnaire	Subjects' self-efficacy in mathematics varies significantly depending on their age and gender, as does their achievement in the subject.
Aremu Ayotolaa, Tella Adedejib 2009	maths	Achiv.& self efficy	M&f stdnts	Qunty	Prim.d	Qustnnaire	The findings indicate that there is no discernible difference in math achievement between males and females. Additionally, there was no discernible difference seen in the mathematics achievement and self-efficacy of males and females.

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Agnes Ebi Maliki, Anthony Ntol Ngban and Julie E. Ibu 2009	Maths	Achiv	M&F students	Quali	Sec.d	Questionnaire	mathematical achievement of junior secondary school students The exam for 2006 was challenging; male students outperformed female counterparts, and in the mathematics exam, pupils from rural schools outperformed those from urban schools.
Adebule, Samuel Olufemi Aborisade, Olatunbosun James, 2014	Math	Attitude	M&F stdts	Qnty	Prim.d	Questionnaire	According to the study, students' attitudes about mathematics were independent of their sexual orientation.
Tella A 2011	Maths	self-efficacy	M & F Teachers	Quli.	Sec. d	Interview	The internet self-efficacy of math teachers is higher, and there is a correlation between their age, internet usage, and self-efficacy. These findings have the potential to significantly improve math instruction and research methodology. Math teachers, regardless of gender, exhibit the same level of internet self-efficacy.
Oke, J.A and Micheal F.A 2012	Maths	Achiv	Gender stdts	Qnty	Prim. D	Questionnaire	a noteworthy impact of therapy on pupils' mathematical achievement Gender and socioeconomic level (SES) did not, however, significantly affect math achievement.
Okon, O.M ad Idaka, I.E 2010	Mths	Motvtn & achive	M&f stdts	Qnty	Prim d	Questionnaire	The findings of this study also demonstrated that there were notable differences between students who demonstrated high, moderate, and low accomplishment motivation, and that pupils who had a positive attitude outperform those who had a negative attitude. Compared to their male peers, female students demonstrated a more favorable attitude toward mathematics. A few suggestions regarding the implications of counseling were given.
Bassey, P.U, Isangedighi, A.J 2011	Maths	Motion & achieve	M & F Stdts	Qnty	Prim. D	Questionnaire	There were notable differences between students who shown high, moderate, and low success motivation. Additionally, students who exhibited a positive attitude outperform those who did not. Compared to their male

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							peers, female students had a more favorable attitude toward mathematics..
Olatoye, R. Ademola* and Agbatogun, A. Olajumoke 2009	Maths &sci	Achive	M&f students	Qnty	Prim d	Questionnaire	Nonetheless, it was discovered that gender had no bearing whatsoever on mathematical achievement because both male and female students excelled in science and mathematics.
Alfred O. Fatade # 3, Love M. Nneji*4, Adeneye O. A. Awofala , Awoyemi A. Awofala 2012	Maths &sci.	Perfmce	Pre-set . Teachers	Qnty	Prim.d	Questionnaire	revealed that pre-service teachers' performance in degree mathematics and science courses at Nigerian universities may not be significantly influenced by their gender.
Helen Odogwu, S.A. Adeyemo, J.A. Jimoh and R.O. Yewonde 2011	Sci&math	Percptn	Gender Teahers	Qnty	Prim. D	Qustnnaire	notable differences between the sexes in terms of staff independence, teacher-student relationships, principal leadership, and job pressure. Even after adjusting for teachers' backgrounds and school features, there were still gender disparities in SMT teachers' assessments of job pressure and principal leadership.

Source: Science Direct; Web of Science; Pro-Quest; Emerald; Google Scholar; Scopus; Springer; ERIC, Tylor and Francis and Google scholar. Research Gate

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