

# ANALYSIS OF SENIOR SECONDARY SCHOOLS MATHEMATICS MOCK EXAMINATION: AN INNOVATIVE ASSESSMENT OF STUDENTS' READINESS FOR SENIOR SECONDARY SCHOOLS MATHEMATICS EXAMINATIONS

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## Abstract

*The purpose of the study was to analyze senior secondary school students' academic performance on central mathematics mock examination (CMME) as an innovative assessment of students' readiness for senior secondary school mathematics examinations. The study was conducted in Osioma Local Government area of Abia State. A sample of 300 students out of a total population of 1205 senior secondary schools three (SSSIII) students were used for the study. The CMME taken by the sampled subjects served as instrument for the data collection. The CMME instrument items were adopted from WAEC and NECO past questions and so are all standardized items. Five research questions were posed to guide the study and four hypotheses were tested for statistical significance at  $p \leq .05$  alpha level of significance. The research questions were answered using frequency and simple percentage. Chi-square test statistic was used to test the four hypotheses ( $P \leq .05$ ). The results of the analyses showed that: the students are still having difficulties in understanding some topics in mathematics which include word problems, measurement, probability, algebra and geometry. Based on the findings, the use of readiness test as innovative assessment is recommended to teachers.*

**Keywords:** Analysis, Mathematics, Readiness and Assessment.

## Introduction

The level of education of the citizenry determines its level of development in any given country. The value of education of individuals and country is unquantifiable, because successful and balanced human existence on this planet is dependent on mathematics application in one way or the other. Probably because of that mathematics was made a core and compulsory subject in the entire school curricula. This is evident among the school subjects offered at various levels of education as specified in the National Policy on Education (FGN, 2013). Mathematics is the foundation of knowledge, the key that unlock the mystery of the sciences. It is a science of quantity and space as well as a systematized, organized and exact branch of science. It is a creation of human mind, concerned primarily with ideas, processes and reasoning. Mathematics can therefore be looked at as a body of knowledge, a collection of techniques and methods, a product of human activities and even an activity itself. Mathematics is characterized by its distinctive concepts, propositions and the method of verifying its propositions namely, logical proofs. It is a body of infallible and objective truth, far removed from the affairs and values of humanity.

The importance of mathematics in human existence is evident in its use in day-to-day human activities, science and technology development. Ideally, if mathematics is properly taught to the students, it can sharpen their minds and enhances their logical thinking with its calculations, inferences and deductions (Odili, 2006). The study of mathematics will form in the students the habit of clarity, brevity, accuracy, precision and certainty in expressions. Everyman requires a certain amount of competence in basic mathematics for purposes of handling money, carrying out daily business, interpreting mathematical graphs and charts as well as thinking logically (Unodiaku, 2010).

Despite the major roles mathematics plays in national development of any country as well as on its citizenry, its teaching and learning are not meeting the expectations with the demands of the national development in Nigeria. The poor performance of Nigerian students in mathematics examinations is worrisome to mathematics and mathematics educators, parents, public, philanthropists, media, etc (Odili, 2006). It is disheartening to note that students' performance in mathematics in both internal and external examinations has been poor despite the numerous importance of mathematics (Popool and Ajani, 2011). Moreso, replete research reports indicate that the performance of students in mathematics and sciences are below expectation (Adeyemo, 2011). The teaching and learning of mathematics in secondary schools are in a dismal state. Students find it difficult to understand the topics taught and teachers equally find it difficult to achieve effective teaching. These are evidenced in the performance of students offering mathematics especially at the 2014-2017 West African Senior Secondary School Certificate Examination (WASSCE), where the percentages of students that obtained credit passes and above in mathematics is within the range of 31.28% to 59.62% despite that all senior secondary school students offer mathematics. This observed poor performance in mathematics has been a matter of serious concern to all educators, parents and society.

It is this anxiety and fear that causes poor performance in mathematics among students thereby making them hate mathematics. Some extend the hatred to mathematics teachers; some students leave the mathematics classes before or during the classes, refuse doing their assignment or even practicing mathematics at home. According to Unodiaku (2010) readiness is a potent factor that determines students' achievement in mathematics. Readiness is a specific factor of cognitive strategies, content knowledge, academic behaviours and contextual knowledge (Conley, 2015). Readiness has to do with 'preparedness' or 'mastery' of a subject-matter background knowledge that can enable the learner to cope with further or next higher level of learning of the subject-matter or related learning task (Asubibel, Narok and Harison, 1978). It is therefore, pertinent to know how 'ready' / 'prepared' or 'airily ready' or 'not ready', the senior secondary school classes three (SSSIII) students were in terms of context coverage and mastery of the National Curriculum for senior secondary school mathematics curriculum, using central mock mathematics examination (CMME) as assessment for such readiness (preparedness/ mastery) before they were engaged in WAEC or NECO examinations. That is to say administering central mathematics mock examination to prospective WAEC and NECO candidates which is composed of standardized WAEC and NECO mathematics test items so as to give teachers and school authorities baseline data that can enable them know the adequacy of the teachers and students' coverage and mastery of the mathematics curriculum content before advancing them to external examinations (WAEC & NECO examinations).

According to Adeyemo (2011), in most countries, including Nigeria, girls and women are reported to participate far less in science and technology than boys and men. More interesting studies conducted have shown that males performed better than females in mathematics tests

(Johnstonese and Seymour, 2010; Olosunde and Ololeye, 2010; and Unodiaku, 2013). However, some research findings revealed that girls performed better than boys in mathematics tests (Hydea & Merzb, 2009; Unodiaku, 2015; and Anibueze, 2017). Other research findings reported that males and females are at par in mathematics performance (UNESCO, 2015; and Unodiaku, 2010). These inconsistency reports therefore need to be clarified in this study so as to know the level of readiness of males and females students or the group that is ready or fairly ready more than the other or whether they share equal strength in mathematics. Such information will help in bridging the gap that may exist before the main external examination.

Also, this study determined the influence of location as a factor of variance on students' academic achievement in senior secondary school mathematics mock examination. This is because some scholars upheld that school location is a factor of academic achievement while others disagreed. For instance, Kefentse and Mamello (2015) reported that students' achievement is basically based on students' location. Moreso, Nyiam (2012) reported that location matter a lot in students' achievement. However, Kissan (2006) and Bosede (2010) earlier reported that location have no effect on students' academic achievement. Yet more, Ezudu and Obi (2013) report indicated that there is no significant difference in the mean scores of students in rural and urban secondary schools as evidenced in their research results. These reported disparities in mathematics achievement between urban and rural students is another source of worry and therefore call for investigation in this study to know the readiness level of students in their location areas prior to the main external examinations.

The poor performance in mathematics so far reported in mathematics, none indicated whether the poor performance is peculiar to science or non-science students or whether both share equal strength on the subject. Instead, the reports were based on the performance of the total enrollment in the external examinations such as in WAEC and NECO examinations. This study is geared towards, clarifying this notion. This study is focused on analyzing senior secondary school central mathematics mock examination so as to determine the readiness level of the students preparing for senior secondary school certificate examinations.

Despite several roles mathematics plays in all human endeavours, which necessitated unrelented efforts made by stakeholders in education to enhance students' performance on the subject, several reports from chief examiners (WAEC and NECO) and researchers clearly indicated that students' performance on the subject is still generally poor. This poor performance of the students on the subject was attributed to their lack of readiness/ preparedness/possession of the subject matter background knowledge or sophistication that can enable them cope with further learning of the subject or related subject areas. The problem of this study pose as a question is, how far can the senior secondary school CMME be used to determine the mathematics readiness of senior secondary school III students intending to undertake external examinations conducted by WASC and NECO?

### **Purpose of the Study**

The study is geared towards achieving the following objectives.

1. To identify the topics in senior secondary school mathematics that students most frequently exhibit readiness when exposed to CMME.
2. To determine how far males and females students' mathematics' readiness vary when exposed to CMME.
3. To determine how far public and private students' mathematics readiness vary when exposed to CMME.

4. To determine how far urban and rural students' mathematics readiness vary when exposed to CMME.
5. To determine how far science and non-science students' mathematics readiness vary when exposed to CMME.

### **Research Questions**

The study was guided by the following research questions:

1. What topics in senior secondary school mathematics curriculum do students exhibit readiness to learn as determined by CMME?
2. How far does gender influence mathematics readiness of senior secondary school students for external examinations when exposed to CMME?
3. How far do public and private students' mathematics readinesses for senior secondary school mathematics examination differ when exposed to CMME?
4. How far do urban and rural students' mathematics readinesses vary when exposed to CMME?
5. How far do science and non-science students' mathematics readinesses differ when exposed to CMME?

### **Research Hypotheses**

Four hypotheses were formulated to guide the study. They were tested at  $P \leq .05$  level of significance. They are as follows:

- Ho<sub>1</sub>: There is significant relationship between the mathematics readiness of males and females students exposed to MME.
- Ho<sub>2</sub>: There is no significant relationship between the mathematics readiness of private and public students exposed to MME.
- Ho<sub>3</sub>: There is no significant relationship between the mathematics readiness of urban and rural students exposed to CMME.
- Ho<sub>4</sub>: There is no significant relationship between the mathematics readiness of science and non-science students exposed to CMME.

### **Method**

The design of the study was Ex Post Facto design. This design was considered appropriate for the study because variables of the study (gender, school type, location) were non-manipulable. This Ex Post Facto design was successfully applied by Unodiaku (2010) in a study to determine mathematics readiness of JSSIII students intending to resume a new mathematics programme in SSSI. The students' scores in the CMME were used without effecting any change. This is because the CMME items were adopted from both WAEC and NECO past questions papers, and are all standardized items. The area of the study was Osioma L.G.A of Abia State.

The target population is 1205 SSSI students in Osioma local government area of Abia State (SSMB, 2019). The researchers used stratified simple and random sampling techniques to draw five schools out of the ten public secondary schools in the study area which is composed of 2 public and 1 private schools from urban, and 1 public and 1 private schools from rural with 201 and 99 students from urban and rural locations respectively; 188 and 112 students from public and private schools respectively; 118 and 182 students from science and non-science categories; and 139 and 161 males and females respectively, through intact classes, which yielded a total sample size of 300 subjects used for study.

The instrument used for this study was central mock mathematics examination questions set, administered and marked by the senior secondary management board (SSMB) for SSSIII students in the study area (See Appendix 1 for the instrument). The questions were WAEC and NECO standardized questions. The CMME instrument was of two sections (A and B). Section A was made up of five compulsory questions (40%) and section B contained eight questions to answer five (60%). The researchers standardized the scores by vetting randomly using marking guide. The CMME items used for this study were representatives of the various topics covered by the National curriculum for senior secondary school mathematics and this had content validity. The CMME questions had questions on number and numeration, algebra, geometry, measurement, trigonometry, probability and statistics. The reliability of the instrument was in the form of marker reliability in which the students' scripts were remarked by the researchers and the scores recorded. The two sets of scores were correlated using Pearson product moment correlation technique which yielded correlation coefficient of 0.79. The five research questions were answered using frequency and simple percentages while the four hypotheses were tested using chi-square test statistic at 0.05 alpha level of significance. The researchers adopted Unodiaku, (2010) mathematics readiness test classification in which those that score from 0% -39% (not ready); 40% -49% (fairly ready); and 50% -100% (ready).

## **Results**

The findings of the study were presented in line with the research questions and hypotheses.

**Research Question One:** What topics in senior secondary school III mathematics curriculum do students exhibit readiness to learn as measured by CMME?

The result showed that 60% of the students or more answered questions in number and numeration, trigonometry and statistics covering questions 1, 2,7,9,12 and 13 correctly and scored high marks on most of them while less than 40% of them did not attempt questions in algebra, geometry; and probability covering questions 3,4,5,6,8,10 and 11 (See Appendix 1 for the items). In all not more than 25% of the students passed at credit level. The 25% of the students that got credit level pass only in the test and the difficulty they exhibited in performance in algebra, geometry and probability shows that they are not 'ready' for senior secondary schools external examinations conducted by WAEC and NECO.

**Research question Two:** How for does gender influence mathematics readiness of senior secondary school students in CMME?

**Table 1: Frequency and simple percentage on Readiness level of males and females students exposed to CMME**

<b>Gender</b>	<b>N</b>	<b>Percentage Readiness level of students</b>		
		<b>Ready</b>	<b>Fairly ready</b>	<b>Not ready</b>
Male	139	28(20.149)	37(26.62%)	74(53.24%)
Female	161	30(18.63%)	40(24.85%)	91(56.52%)
Grand Total	300	58	77	165
% difference		1.51%	1.77%	

Table 1 above show the males and females students' readiness level when exposed to CMME. In their achievement on the mock examination, 20.14%, 26.62% and 53.24% of the males were ready, fairly ready and not ready, respectively, while 18.63%, 24.85% and 56.52%

of their counterpart females students were ready, fairly ready and not ready, respectively. In general, males are ‘ready’ more than the females in the mock examination. The table clearly indicated variability in readiness level across gender variable in the study.

**Research question three:** How far do public and private students’ mathematics readinesses vary as measured by CMME?

**Table 2: Frequency and simple percentage on Readiness level of Public and private students exposed to CMME**

School type	N	Percentage (%) Readiness level of students		
		Ready	Fairly ready	Not ready
Public	188	52 (27.66%)	39 (20.74%)	97 (51.60%)
Private	112	28 (25%)	13 (11.61%)	71 (63.39%)
Grand Total	300	80	52	168
% difference		2.66%	9.13	11.79%

Table 2 shows the public and private students’ readiness level after taking the CMME. Their achievement on the CMME showed that students attending public secondary schools, 27.66% and 20.74% of the 188 students were ‘ready’ and ‘fairly ready’ respectively, while 51.60% were ‘not ready’. Moreso, in the privately owned schools, the table revealed that 25% and 11.61% of the 112 students in the private schools were ‘ready’ and ‘fairly ready’ respectively while 63.39% were not ready. The table also revealed that in both public and private schools, 2.66% were ready, 9.13% and 11.79% were ‘fairly ready’ and ‘not ready’ respectively.

**Research question four:** How far do urban and rural students’ mathematics readinesses vary when exposed to CMME?

**Table 3: Frequency and simple percentage on readiness level of urban and rural students exposed to CMME**

Location	N	Percentage (%) Readiness level of students		
		Ready	Fairly ready	Not ready
Urban	201	59 (29.35%)	73 (36.32%)	69 (34.33%)
Rural	99	22 (22.22%)	29 (29.29%)	48 (48.48%)
Grand Total	300	81	102	117
% difference		7.13%	7.03%	

The above Table 3 shows that out of 201 students schooling in urban locality percentages that were ‘ready’ and ‘fairly ready’ are 29.35% and 36.32% respectively while percentages ‘ready’ and ‘fairly ready’ in the rural locality were 22.22% and 29.29%. respectively, an indication that is general urban students performed better than their rural counterpart in the mock examination. Yet more, the 34.33% and 48.48% of the students that are ‘not ready’ in the urban and rural localities respectively, clearly indicate that rural students registered more failures in the mock examination. In general, the table revealed that the percentage of those ready against those ‘fairly ready’ and ‘not ready’ is not encouraging. Obviously, students in both urban and rural schools are ‘not ready’ for external examination in mathematics considering the percentage ‘ready’ against the percentage ‘fairly ready’ and ‘not ready’.

**Research question five:** How far do science and non-science students’ mathematics readinesses differ as measured by CMME?

**Table 4: Frequency and simple percentage on readiness level of science and non-science students exposed to CMME**

Category	N	Percentage (%) Readiness level of students		
		Ready	Fairly ready	Not ready
Science	188	35 (29.67%)	61 (51.69%)	22 (18.64%)
Non-science	112	14 (7.69%)	33 (18.13%)	135 (74.18%)
Grand Total	300	37.36%	69.82%	92.82%
% difference		21.98%	33.56%	55.54%

Table 4 above revealed that out of 118 science students that sat for the CMME, 29.67%, 51.69% and 18.64% were ‘ready’, ‘fairly ready’ and ‘not ready’ respectively. That means 29.67% only passed at credit level while the rest of 51.69% and 18.64% got pass and failure respectively. This is an indication that in general poor performance is recorded in the examination. From the table science students are ready more than non-science students with percentage difference of 21.98% and 33.56% for those ‘fairly ready’. Yet more, among those that were ‘not ready’ (that failed), the non-science category recorded more failures in the examination with percentage difference of 55.54 % in favour of science group. In general the percentages of those ‘ready’ in both science and non-science categories are clear indication that the students did not show evidence of readiness for SSC examination set, conducted and marked by WAEC and NECO.

**Hypotheses**

Ho<sub>1</sub>: There is no significant relationship between the mathematics readiness of males and females students exposed to mathematics mock examination.

**Table 5: Summary of Chi-square test statistic on the relationship between the mathematics readinesses of males of females students exposed to CMME**

Gender variable	Ready	Fairly ready	Not ready	$\alpha$	df	$\chi^2$ cal. val	$\chi^2$ crit.val	Decision
Male	28(26.87)	37 (35.68)	74 (76.45)		298			
Female	30 (31-13)	40 (41.32)	91 (88.55)	.05		0.3258	0.103	Reject H <sub>o</sub>

$\chi^2$ cal.val = 0.3258;  $\chi^2$  ( $\alpha = .05$ , df = 2) = 0.103.

Table 5 shows that the chi-square calculated value of 0.3258 is greater than the chi-square critical value ( $\chi^2_{\alpha} = .05, 2$ ) = 0.103. The null hypothesis of no significant relationship is therefore rejected. This means that the readiness level of males and females students exposed to the CMME are significantly related. In other words, there is no significant disparity in performances of males and females students in the CMME. The table clearly indicated that there is percentage difference but the difference is not significant ( $p \leq .05$ ). In general, both males and females are ‘not ready’ for senior secondary school certificate examination.

H<sub>0</sub><sub>2</sub>: There is no significant relationship between the mathematics readiness of students in public and private schools exposed to CMME.

**Table 6:** Summary of  $\chi^2$  test statistic on the relationship between public and private students exposed to CMME

School type	Ready	Fairly ready	Not ready	$\alpha$	df	$\chi^2$ cal. val	$\chi^2$ cri.val	Decision
Public	52 (50.13)	39(32.13)	97 (105.28)	.05	298	7.6841	.103	Reject Ho
Private	28 (29.87)	13 (12.31)	71 (62.72)					

$\chi^2$ cal.val = 7.6841;  $\chi^2(\alpha = .05; df=2) = 0.103$ .

Table 6 above show that the chi-square calculated value of 7.06841 is greater than the chi-square critical value ( $\chi^2_{\alpha = .05,2} = .103$ ). The hypothesis of no significant relationship was therefore rejected. This means that the readiness level of students schooling in the public secondary schools are related to the readiness level of their counterpart students schooling in the privately own secondary schools. This suggests that the observed percentage differences in their readiness level do not statistically differ. The observed percentage difference of 2.66% (ready), 9.13% (fairly ready) and 11.79% (not ready) are indication of variation in readiness level between the students from public and private schools.

H<sub>0</sub><sub>3</sub>: There is no significant relationship between the mathematics readiness of urban and rural students exposed to the CMME.

**Table 7:** Summary of  $\chi^2$  test statistic on the relationship between the mathematics readiness of urban and rural students exposed to CMME

Location variable	Ready	Fairly ready	Not ready	$\alpha$	df	$\chi^2$ cri. val	$\chi^2$ crit.val	Decision
Urban	59 (54.27)	73 (68.34)	69 (78.39)	.05	298	5.6407	0.103	Reject Ho
Rural	22 (26.73)	39 (33.66)	48 (38.61)					

$\chi^2$ cal.val = 5.6407;  $\chi^2(\alpha = .05; df=2) = 0.103$ .

Table 7 above shows that the  $\chi^2$ cal.val of 5.6407 is greater than the  $\chi^2$ crit.val. ( $\chi^2_{\alpha = .05,2} = 0.103$ ). The null hypothesis is therefore rejected. This means that the readiness level of students schooling in urban located schools exposed to the CMME is significantly related. In other words the observed percentage differences in readiness level of urban and rural students in the CMME are not statistically different ( $P \leq .05$ ).

H<sub>0</sub><sub>4</sub>: There is no significant relationship between the mathematics readiness of science and non-science students exposed to CMME.

**Table 8:** Summary of  $\chi^2$  test statistic on the relationship between the mathematics readiness of science and non-science students exposed to CMME

Category	Ready	Fairly ready	Not ready	$\alpha$	df	$\chi^2$ cal. val	$\chi^2$ crit.val	Decision
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Science	35 (19.27)	61 (36.97)	22 (61.75)					
Non-science	14 (29.73)	33 (57.03)	135 (96.25)	.05	298	89.09	0.103	Reject Ho

$\chi^2_{cal.val} = 89.09; \chi^2(\alpha = .05; df=2) = 0.103.$

Table 8 above show that the chi-square calculated value of 89.09 is greater than the chi-square critical value ( $\chi^2_{\alpha} = .05, 2) = 0.103$ . The hypothesis of no significant relationships was therefore rejected. This implies that the readiness levels of science and non-science students exposed to the CMME are significantly related. In other words, the observed percentage difference in readiness level of the science and non-science groups is not statistically different.

**Discussion of Results**

The results of the study were discussed in accordance with the research questions and hypotheses.

Results of research question one revealed that in the CMME, remarkable improvement were in answering questions from number and numeration, trigonometry and statistics. However, the result showed that the students find it difficult to solve questions from algebra, geometry and probability. In general, the result indicated that the students were ‘not ready’ for external examinations (SSCE and NECO), since not more than 25% of the 300 candidates got credit level pass. This finding is in consonance with earlier reports (Wonu and Zalmon, 2018; Rusell, 2013; BECE chief Examiner, 2012) who all reported that examinees find problems in algebra difficult to learn. Moreso, the BECE chief Examiner’s (2012) report indicated that students find algebra difficult to learn when he pointed out that on the question, “Kufre is twice as old Edet. Four years ago, he was four times as old as Edet. When will the sum of their ages be 66?”, the question was not attempted by majority of the candidates. Some areas of the syllabus that were poorly attempted by majority of the candidates include geometry (WAEC Chief Examiners’ reports, 1995, 1997 and 2014). Moreso, interest in mathematics geometry and probability, in particular have also dwindled leading to poor performance of secondary school students in them (Ezema, 2009; Ozofor, 2009; and Unodiaku, 2012).

The result of research question two indicated that gender is a factor of variance in CMME. The result of table 1 indicated that males are ‘ready’ and ‘fairly ready’ more than their female counterpart. Moreso, the table indicated that females recorded more failures in the CMME than males (among those ‘not ready’). This finding is in consonance with earlier reports (Johnstonese, 2010; Olusunde and Ololeye, 2010; and Unodiaku, 2013) who all reported that males achieve higher mean gain scores in mathematics tests than females. However, the result contradicts earlier reports that females performed better than males in mathematics achievement (Hydea and Merzbn, 2009). This disparity in readiness level of males and females was tested for relationship ( $p \leq .05$ ) and found significantly significant.

The results of research question five showed that the percentage difference in readiness level between the science and non-science students who took the CMME was 21.98 in favour of science students. In otherwords science students are ‘ready’ and ‘fairly ready’ more than their counterpart students in non-science category. This superiority of science students in their readiness level for external examinations conducted by WAEC and NECO was also supported by Adeyemo (2011) who noted that in most countries including Nigeria, girls and women are reported to participate far less in science and technology than boys and men. Reason for superiority of science over non-science students in mathematics achievement test could be that

all the formulae and calculations in science are mathematics and so science students are constantly practicing mathematics quite unlike non-science students that are arts inclined. However, this percentage difference was tested ( $\chi^2_{\alpha=.05} = 0.103$ ;  $\chi^2_{\text{cal.val}} = 89.09$ ) for relationship between science and non-science categories, which indicated no significant difference. Considering only 19.29% and 29.73% of the science and non-science students that took the examination and passed, at credit level, it is obvious, that the two groups are not ready for the external examinations.

Finally, the results of research questions four clearly indicated that the percentage difference between those that are 'ready' and those 'fairly ready' or 'not ready' in the urban locality was too small. Similar observation was made on the readiness level of students from the rural schools which also indicated small percentage differences in their readiness levels. These observed differences were tested ( $\chi^2_{\alpha=.05,2} = .103$ ;  $\chi^2_{\text{cal.val.}} = 5.6407$ ) which indicated no significant relationship in their readiness level.

In other words, students in urban and rural schools were not ready equally for external examination, as can be evidenced from the onset, since 29.35% and 22.22% only from urban and rural were ready. This means that the remaining 70.65% and 77.78% respectively were not ready or fairly ready. From urban and rural, only 29.35% and 22.22% passed at credit level; an indication that in general, performances in both localities are significantly related and poor. However, the small percentage difference of 7.13% in favour of urban students is supported by some earlier researchers (Onah, 2011; and Owoeye and Yara, 2011) who all indicated that students in urban schools perform better than students from rural schools in science (mathematics inclusive). Yet some researchers (Asiyat, 2004; and Nyiam, 2012), indicated that students in rural schools perform better in science and mathematics than their counterpart in urban schools. Based on the foregoing the issue of location as factor of mathematics readiness is inconclusive.

### **Conclusion**

Based on the results of the study, the following conclusions can be drawn about the senior secondary school students' readiness for external examinations (SSCE and NECO) as measured by central mock mathematics examination in Abia State.

- i. Students still had difficulty in understanding some mathematics concepts which include algebra, geometry and probability.
- ii. Gender is a factor of variance in students' mathematics readiness, as males were 'ready' more than females.
- iii. Science students were 'ready' more (performed better) than the non-science students with percentage difference of 21.98% in favour of science students.
- iv. Location of schools affect the readiness level of students, as can be evidenced in the CMME.
- v. School type is a factor of variance in measuring students' mathematics readiness as public schools were 'ready' more than private schools with percentage difference of 2.66% in favour of public schools.

### **Recommendations**

Based on the results of the study, the following recommendations are made.

- i. Mathematics teachers should use readiness test to determine those that are 'ready' fairly ready' and 'not ready' before exposing the students to external examinations such SECE and NECO.
- ii. As much as possible, mathematics teachers should use readiness test at every stage of mathematics instruction especially in term and end of session examinations.
- iii. Teachers should infuse more strategies/new techniques in mathematics teaching especially in those areas that are difficult for students to understand.
- iv. Curriculum designers and planners should entrench readiness test in the curriculum of mathematics so as to enable teachers evaluate and determine the readiness level of the students at every stage of mathematics instruction.
- v. Examination bodies (WAEC & NECO) should administer a uniform readiness test to all prospective candidates for their respective examinations before the main examination, so that only those that are 'ready' can be allowed to sit for the external examinations.

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