

# Teachers' Perception of the new Nine-Year Basic Education Mathematics Curriculum in Nigeria

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**Abstract**— The study investigated the perception of primary and junior secondary mathematics teachers on the new nine-year basic education mathematics curriculum in Nigeria. A descriptive survey design was adopted for the study and the participants were two hundred experienced mathematics teachers in forty public primary schools and twenty junior secondary schools in Calabar Municipality and Calabar North Local Government Areas of Cross River State, Nigeria. One instrument tagged “perception of teachers of the new basic education mathematics curriculum” was used for data collection. The results showed that teachers’ perception of the new nine-year basic education mathematics curriculum was high and their perceptions were neither gender sensitive nor academic qualification specific. However, teachers showed a high degree of ownership of the content of the new basic education mathematics curriculum despite their lack of necessary training in the principles underpinning the curriculum.

**Keywords**— Teacher perception, basic education, mathematics curriculum.

## I. INTRODUCTION

The past six decades have resulted in many calls for educational reform in Nigeria. Stakeholders in the education industry vis-à-vis parents, teachers, and professional educators have all lent their voices to new and innovative approaches to teaching of science, technology and mathematics. Mathematics education in Nigeria is responding to this call by laying more emphasis on teaching mathematical skills and principles using mathematical concepts. In the 50s the teaching of mathematics at the primary school level was characterized by attainment of arithmetical skills. During this

period according to [2] the teaching and learning of arithmetic was dominated and nurtured by rote learning of computational skills in which learners were unable to transfer their skills to new situations. This was soon replaced by the modern mathematics in the 70s. The introduction of modern mathematics was seen as a veritable solution to the problem of insufficiency in the academic substance of the school mathematics curriculum experienced during the meaningful arithmetic era [2]. The modern mathematics flourished till 1976 before it was abolished in January 1977 and a return to traditional mathematics was enforced in all primary schools in the country. Since then the school mathematics curriculum has undergone significant and unprecedented changes based on the National Policy on Education [5], [6], [7] and the dictate of the ever changing society.

Of recent, Nigeria introduced new mathematics curriculum for her citizenry. This curriculum was a fall out from the launching of the Universal Basic Education Programme in 1999 by the Federal Government. The introduction of this curriculum, Curriculum 2007 heralded a new beginning in the era of mathematics curriculum reform in Nigeria. The basic education mathematics curriculum was introduced for children of school-going age covered by the Universal Basic Education Programme. The new basic education mathematics curriculum

is for 9 years of continuous schooling. Its implementation started in September, 2008 in all public and private primary and junior secondary schools in the country. This is to allow for a gradual and systematic phase out of the old mathematics curricula. The old junior secondary school (JSS) mathematics curriculum was phased out throughout the country in June 2011 while the old primary mathematics curriculum would be phased out by June 2013. However, the new basic education mathematics curriculum has a 3-level structure: Lower level Basic Education Mathematics Curriculum for primary 1-3, Middle level Basic Education Mathematics Curriculum for primary 4-6, and Upper level Basic Education Mathematics Curriculum for JSS 1-3. The philosophy of the 9-year Basic Education Curriculum (BEC) entails that “every learner who has gone through 9 years of basic education should have acquired appropriate levels of literacy, numeracy, manipulative, communicative and life-skills; as well as the ethical, moral, and civic values needed for laying a solid foundation for life-long learning as a basis for scientific and reflective thinking” [11]. For easy implementation of the curriculum in schools efforts have been geared toward teachers’ capacity building on the use and selection of instructional materials, and orientation and sensitization of teachers of BEC. Notwithstanding these efforts, it is daunting to note that teachers’ perceptions will play a prominent role in the implementation of the nine-year basic education mathematics curriculum.

Reference [12] stated: Teachers’ perceptions toward the change process (need for change, manner in which the change was managed, amount of teacher input into the change, etc.) was the single best indicator of teachers’ free choices and actual decisions concerning adoption of the change. Reference [3] interviewed 40 teachers on their perceptions of the implementation of the Victorian Certificate of Education (VCE), a curriculum that relied heavily on investigative work. They found that a number of teachers held contradictory beliefs to the reform and some teachers were finding difficulties while others teachers were just paying lip service

to the curriculum goals but not implementing them. Among the mitigating factors accounting for these behaviours were heavy work loads, lack of training, and the pressure on content coverage [8]. Reference [4] interviewed three Auckland primary teachers in regard to the Mathematics in the *New Zealand Curriculum*, which emphasized constructivist practices, and found that the participants had personal concerns about the curriculum being implemented. Among these concerns, teachers felt that the curriculum was vague and unstructured. Teachers had difficulties in identifying the mathematical content learned by students within a particular strand. At the same time teachers lacked knowledge about some topics and terminology used in the curriculum. Moreover, teachers had “difficulties in maintaining control over what was happening if children were left to explore an idea for themselves”. More recent example of contradicting views and demands in the implementation of educational reform in mathematics have been documented by [10], [1], [15]. It is succinct to bring to fore knowledge the lack of relevant training that accompanies most innovations in mathematics education [14] as many teachers are sceptical about reform as they have not been properly briefed of the “technicalities involved or given the support that is necessary” [8]. In a recent study conducted by [13] in which he investigated the perception of secondary school teachers on the Universal Basic Education (UBE) programme as an educational reform policy in Nigeria found out that teachers have low perception of the UBE as an educational reform policy. Also, [9] found out that Nigerian teachers possessed low level knowledge of curriculum reforms in mathematics but were favourably disposed to curriculum reforms in mathematics education.

Teachers are central to reform in mathematics education particularly at the primary education level where all teachers are generalists and are mandated to teach mathematics. It is against this background that this study aimed at specifically investigating teachers’ perception of the new nine-year basic education mathematics curriculum in Nigeria.

**II. RESEARCH QUESTION**

What is the level of primary and junior secondary schools teachers’ perception of the new nine-year basic education mathematics curriculum in Nigeria?

**III. HYPOTHESES**

The following null hypotheses were raised for this study:

*Ho1:* There is no significant difference in the mean teachers’ perception of the new nine-year basic education mathematics curriculum based on gender.

*Ho2:* There is no significant difference in the mean teachers’ perception of the new nine-year basic education mathematics curriculum based on academic qualifications.

**IV. METHODOLOGY**

The research methodology for the study was descriptive survey. The study covered Calabar Municipality and Calabar South Local Government Areas of Cross River State, Nigeria. Twenty public primary schools and ten public junior secondary schools were randomly selected from each Local Government Area to ensure uniformity. Four mathematics teachers from each primary school and two mathematics teachers from each junior secondary school were purposively selected to make a total of two hundred mathematics teachers that participated in the study. The 103 male and 97 female teachers ranged in age from 28 to 63 years with a median age of 50 years. 110 of the teachers had a basic teaching qualification, 70 had a Bachelor degree and 20 held a post graduate qualification. All the teachers held formal qualifications in mathematics education. A one page instrument tagged “perception of teachers of the new basic education mathematics curriculum” was used to elicit information on teachers’ age, gender, qualifications and perceptions about the new Basic Education Mathematics Curriculum. A four-point Likert Scale with rankings from 1 (strongly disagree) to 4 (strongly agree) was used. A panel of experts reviewed the 16-item survey for content and face

validity. The members of the panel included experts in Mathematics Education from the Department of Mathematics, Emmanuel Alayande College of Education, Lanlate Campus and Researchers from the Nigerian Educational Research and Development Council, South-South Zonal Office, Calabar. A total of 40 mathematics teachers from 10 primary schools and five junior secondary schools in Ogun State, Nigeria participated in pilot testing of the instrument. The pilot test results revealed no ambiguities in the instrument and produced a Cronbach’s alpha coefficients 0.83 (for construct validity and internal consistency reliability). One of the researchers and two other trained research assistants personally administered the instrument to the whole sample. Data collected were summarized and analysed using means, standard deviation, t-test, analysis of variance and factor analysis. Alpha was set *a priori* at .05.

**V. RESULTS**

The 16 items measuring teacher’s perceptions about the new nine-year Basic Education Mathematics Curriculum were analysed with Principal Components Analysis with the factor loadings shown in Table 1A based on an Oblimin one factor resolution. Mean scores in Table 1a are expressed on a 4-point Likert Scale from 1 (strongly disagree) to 4 (strongly agree).

**TABLE 1A  
FACTOR ANALYSIS OF TEACHER’S PERCEPTION OF THE NEW NINE-YEAR BASIC EDUCATION MATHEMATICS CURRICULUM**

No.	Item	Loading	Mean
1.	Teaching new Basic Education Mathematics Curriculum enables me to more effectively meet the needs of my students.	0.66	3.74
2.	I am a supporter of the change to new Basic Education Mathematics Curriculum.	0.60	3.47
3.	I believe that the new Basic Education Mathematics Curriculum will give students a solid base to further mathematics in the senior secondary school.	0.57	3.52
4.	I believe that the old mathematics curriculum is better than the new Basic Education Mathematics Curriculum.	-0.59	2.36
5.	To me the new Basic Education Mathematics Curriculum is activity based.	0.65	3.51
6.	To me the new Basic Education	-0.63	2.16

	Mathematics Curriculum is vague and unstructured.		
7.	I am knowledgeable about topics and terminologies used in the new Basic Education Mathematics Curriculum.	0.53	3.24
8.	I find it difficult to identify the mathematics content learned by students within a particular theme in the new Basic Education Mathematics Curriculum.	-0.60	2.15
9.	I have undergone training in the principles underpinning the new Basic Education Mathematics Curriculum.	-0.58	2.38
10.	I can effectively teach every aspect of the new Basic Education Mathematics Curriculum.	0.51	3.21
11.	I owe little ownership of the mathematical content of the new Basic Education Mathematics Curriculum.	-0.58	2.48
12.	I am more influenced by the dictate of examinations than new Basic Education Mathematics Curriculum in defining what and how to teach mathematics.	0.62	3.10
13.	I see the new Basic Education Mathematics Curriculum laying more emphasis on the constructivist pedagogies.	0.58	3.05
14.	I find every topic in the new Basic Education Mathematics Curriculum to be associated with quantitative reasoning tasks to facilitate the development of problem solving and psychomotor skills.	0.62	3.12
15.	I find it difficult to comprehend the structure of the new Basic Education Mathematics Curriculum.	-0.48	2.20
16.	I am ignorant of the new Basic Education Mathematics Curriculum.	-0.49	2.24

The results in Table 1B showed that 156 (78%) primary and junior secondary mathematics teachers have high level perception of the new nine-year basic education mathematics curriculum while 44 (22%) recorded low level perception. The teachers' perception scores were categorized high level (for perception score above the grand mean) and low level (for perception score below the grand mean) based on the mean perception score of the sampled teachers. Thus, it is concluded that majority of the teachers had high level perception of the new nine-year basic education mathematics curriculum.

TABLE 1B

PERCENTAGE DISTRIBUTION OF TEACHERS' PERCEPTION OF THE NEW NINE-YEAR BASIC EDUCATION MATHEMATICS CURRICULUM

Teachers' level	Frequency	Percent (%)
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of Perception		
Low	44	22
High	156	78
Total	200	100

Grand Mean Score- 40.07, SD-11.31

The results in Table 2 clearly showed that there exist no significant difference in the perception of the new nine-year basic education mathematics curriculum between male and female primary and junior secondary mathematics teachers in Nigeria ( $t(2, 198) = 0.989, p > 0.05$ ). Therefore, the hypothesis, which states that there will be no significant difference in the perception of the new nine-year basic education mathematics curriculum between male and female primary and junior secondary mathematics teachers, was thus accepted. This implies that gender had no influence on the mathematics teachers' perception of the new nine-year basic education mathematics curriculum.

TABLE 2

t- TEST STATISTICAL DIFFERENCE OF PERCEPTION OF THE NEW NINE-YEAR BASIC EDUCATION MATHEMATICS CURRICULUM BETWEEN MALE AND FEMALE TEACHERS

Group	N	Mean	Std	Df	t	p	Remks
Male	103	40.85	11.61	198	0.989	>.05	Accept
Female	97	39.28	10.83				

The results in Table 3 showed that there exist no significant difference in the primary and junior secondary mathematics teachers' perception of the new nine-year basic education mathematics curriculum based on academic qualification ( $F(2, 199) = 1.6219, p > 0.05$ ). Consequently, the hypothesis which states that there is no significant difference in the primary and junior secondary mathematics teachers' perception of the new nine-year basic education mathematics curriculum based on academic qualification was accepted. This implies that academic qualification had nothing to do with teachers' perception of the new nine-year basic education mathematics curriculum.

TABLE 3

ANALYSIS OF VARIANCE OF TEACHERS' PERCEPTION OF THE NEW NINE-YEAR BASIC EDUCATION MATHEMATICS CURRICULUM BY ACADEMIC QUALIFICATION

	Sum of Square	Df	Mean square	F	p	Remarks
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Contrast	134.08	2	67.04	1.6219	>.05	Accept
Error	8,143.01	197	41.335			
Total	8,277.09	199				

VI. DISCUSSION

The study explored a survey of teachers' perception of the new nine-year basic education mathematics curriculum in Nigeria using Cross River State as a case study. Emanating from the results of this study is that primary and junior secondary mathematics teachers had high perception of the new nine-year basic education mathematics curriculum-an aspect of UBE programme reform. This finding disagrees with the findings of [13] who found that Nigerian teachers have low perception of the UBE programme as an educational policy. It also disagrees with the findings of [9] who found that Nigerian teachers possessed low level knowledge of curriculum reforms in mathematics education. This high perception by mathematics teachers may be explained in terms of their high involvement in the review of the old primary and junior secondary mathematics curricula which led to the new nine-year basic education mathematics curriculum. Also, the various advocacy and sensitization workshops mounted by the NERDC for both primary and junior secondary teachers across the country seemed to have yielded positive results in Cross River State going by the high perception of mathematics teachers recorded in the study.

Both primary and junior secondary mathematics teachers were not ignorant of the new curriculum as they claimed that teaching new basic education mathematics curriculum enabled them to more effectively meet the needs of their students. This is contrary to the submission of [9] that many mathematics teachers in Nigeria are ignorant of curriculum reform in mathematics education. The teachers were a strong supporter of the change to new basic education mathematics curriculum and were of the position that the new mathematics curriculum would give students a solid base to further mathematics in the senior secondary school. Furthermore, the teachers viewed the new mathematics curriculum to be better than the old curricula as they regarded the new curriculum to be activity-based. The teachers disagreed that the new basic education

mathematics curriculum was vague and unstructured. This is against the findings of [4] in which the New Zealand mathematics teachers felt that their curriculum was vague and unstructured. Analysis of the results further showed that the sampled teachers were knowledgeable about topics and terminologies used in the new mathematics curriculum as they were capable of identifying the mathematics content learned by students within a particular theme in the new curriculum with ease. Despite teachers decline to have undergone training in the principles underpinning the new mathematics curriculum [14], they maintained that they could effectively teach every aspect of the curriculum. In short, the sampled teachers disagreed that they owed little ownership of the contents in the new mathematics curriculum as they were more influenced by the dictate of examinations than new curriculum in defining what and how to teach mathematics. The latter position of the sampled teachers shows that they attached little importance to the curriculum in defining what and how to teach mathematics. They perceived that every topic in the new nine-year basic education mathematics curriculum is associated with quantitative reasoning tasks to facilitate the development of problem solving and psychomotor skills. However, the sampled teachers did not find it difficult to comprehend the structure of the new mathematics curriculum as they saw the new nine-year basic education mathematics curriculum as laying more emphasis on the constructivist pedagogies.

The results of this study showed that mathematics teachers' perceptions of the new basic education mathematics curriculum were not gender specific. This finding is in support of [13] who found that gender had no influence on teachers' perception of the UBE programme as an educational reform policy. It also corroborates the findings of [9] that gender had no influence on teachers' knowledge of and response to curriculum reforms in mathematics education. This finding indicates that both male and female teachers face similar challenges, experiences and exposure [9] when teaching basic education mathematics. From all indications by the result of

this study, sampled primary and junior secondary mathematics teachers irrespective of their gender have been found to embrace the new nine-year basic education mathematics curriculum despite their lack of necessary training in the principles underpinning the curriculum.

It was evident from the results of this study that mathematics teachers' perceptions of the new basic education mathematics curriculum were not academic qualification specific. The findings showed no mutual supportive relationship between the teachers' perception of the new basic education mathematics curriculum and the varying academic qualifications earned by the various teachers who participated in the study. One conclusion to be drawn from this finding is that teachers showed high degree of ownership of the content of new basic education mathematics curriculum without academic qualification prejudice. The implication of this is that the minimum academic qualification which is Nigerian Certificate in Education (NCE) to teach at primary and junior secondary education levels may be considered adequate for these levels. Students will acquire more knowledge about mathematics when taught by teachers who are qualified and are fully armed with teaching skills and techniques.

Based on the results and findings of this study, it is recommended that workshop on philosophy of the new nine-year basic education mathematics curriculum be organized for primary and junior secondary schools teachers in the country.

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