

Mathematics Teachers' Assessment of the Role of Millennium Development Goals in the Implementation of the 9-Year Basic Education Mathematics Curriculum

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Abstract

The Basic Education Mathematics Curriculum is focused on giving children in Primary and Junior secondary schools in Nigeria the opportunity to acquire mathematical literacy to function in an information age, cultivate understanding of the skills necessary for the changing technical world. The role of the Millennium Development Goals (MDGs) in the realization of the focus of the Basic Education Mathematics curriculum is paramount. This study therefore investigated the Mathematics teachers' assessment of the role of the Millennium Development Goals in the implementation of the 9-year Basic Education Mathematics Curriculum in Nigeria. The study involved four hundred and thirty (430) primary and junior secondary school mathematics teachers in two local government areas of the southern senatorial district of Ondo State. One research instrument tagged "Mathematics Teachers' Assessment of MDGs Questionnaire" on a four point likert scale was used for data collection. Appropriate statistics that is frequency counts, mean and Standard deviation were used to analyze data. The findings of the result revealed that, mathematics teachers at the Basic Education level had a good perception of the roles of the MDGs especially on the area of capacity building of teachers for effective and efficient delivery. Mathematics teachers also had a positive assessment or impression of the MDGs provision of infrastructural facilities including instructional materials to schools. It is therefore recommended that, the training of teachers by MDGs should cut across all teacher and all subjects at the Basic Education level to be able to fully actualize the goals and objectives of the curriculum.

Keywords: Mathematics Curriculum, Millennium Development Goals (MDGs), Teachers' Perception and Assessment, Implementation

1. Introduction

The global trend in educational advancement as supported by various declarations and statements of stakeholders all over the world emphasizes universality and life coping education in all ramifications (Obioma 2009). One of such declarations include the Millennium Development Goals (MDG). One hundred and eighty nine (189) countries of the world including Nigeria sat to meet the needs of the world's poorest people and has widened access to primary and junior secondary education with the hope of achieving some of the Millennium Development Goals (MDGs). Curriculum reform perspectives in mathematics education articulated in many research papers and policy document of different countries aimed at deepening and increasing each learner's mathematical learning and achievement (Luneta & Makonye, 2010). Obioma (2006) also noted that the total development of the individual will depend to a large extent on the implementation of an appropriate curriculum. The MDGs are the eight goals set to make a significant and measurable improvement in the lives of the people. The scheme was launched in 1999 and passed into law in 2004 as one of the strategies aimed at implementing the educational component of the MDGs project conceived in terms of the revolutionary development needs of the country (Okey, 2008). Ondo State started implementation first in 2006 with primary one and junior secondary one with the notion that they will have disarticulation. To achieve these, sound teachers are required in terms of skills and awareness of the national reconstruction process. Though, the MDG project through the Basic Education Curriculum (BEC) programme provides teachers with the opportunity for in-service training, exposure to current trend in the most effective teaching and learning of mathematics through seminars and workshops, most teachers rarely have opportunity to update their skills after formal training, making it difficult to keep up with teaching trends especially in mathematics. Supporting this assertion, Ahmed (2006) also highlighted the roles of the MDGs in teachers development to include; training and re-training of teachers, provision of basic instructional materials to schools, school based assessment and basic computer skills, sensitization of teachers on the four core subjects in the 9-year basic education curricula i.e. English Studies, Mathematics, Social Studies and Basic Science and Technology through the Nigerian Educational Research and Development Council (NERDC) and the National Teachers Institute (NTI). Ivowi (2008) noted that right from basic education to tertiary education level, there are shortages of trained teachers and even the available ones are not properly provided with textbooks, conducive classrooms, laboratory equipments, and refreshing courses. Ekwueme and Meremikwu (2010), in their papers, pointed out such programmes as the MDG project designed to brush up teachers' knowledge of what they learnt in training and learn new approaches and techniques. They

advocated that it should be a regular programme to equip the teachers with job. UBE (2000), in their verification exercise, noted that additional 275,462 teachers were needed to teach in primary school across the country. Fields (1996) also stressed that the preparation of teachers must include deep knowledge of the subject matter they will teach and the skills necessary to communicate that knowledge.

The restructured Basic Education Mathematics Curriculum for primary and junior secondary schools by the Nigerian Educational Research and Development Council (NERDC) is focused on giving the children the opportunity to acquire mathematical literacy to function in an information age, cultivate understanding of the skills necessary for the changing technical world. There is the need to include such changes in the area of information and communication technology since mathematics is associated with quantitative skills which is a driving skill for information technology. The curriculum is a teaching curriculum (document) that provides maximum aids for both the teachers and the students. The curriculum tries to make mathematics more of real life than abstract concept and advocate training and re-training of mathematics teachers to update their technology and competence and acquire more teaching skills (Ekwueme & Meremukwu, 2010). The 9-year Basic Education Curriculum has come from basics one to nine, hierarchically arranged. The pupils at the nine years compulsory basic level would now be taught core basic subjects: English language, Mathematics, social studies and Basic Science and others (NERDC, 2009). Then, at the three-year senior secondary level, which is not within the scope of this study, students will now be exposed to four compulsory cross cutting subjects and four distinct fields of study of which mathematics is prominent in all as a compulsory subject. Now, considering the importance of mathematics and its position in the Basic Education Curriculum, there is a great need for the emphasis on its preparation/organization and effective communication by the teacher. Mathematics is generally made up of concepts which are hierarchical in nature. The understanding of the basic first-order concepts makes it easier to understand the subsequent higher-order concepts and the restructured Basic Education curriculum is structured as such. Experience with the teaching of mathematics in most Nigerian secondary schools showed that many mathematics teachers are under the pressure of external examination syllabus and school scheme of work and this makes them always in a hurry to complete the syllabus irrespective of the students' level of understanding of the concepts taught (Ekwueme, 2006). We cannot teach mathematics effectively without making sure that the lower-order concepts or the pre-requisites have been thoroughly understood so that its usefulness could be felt at a higher class and that is what the restructured curriculum is advocating. The distinction between primary and secondary concepts must be clear because that is the basis of the learning hierarchy which is very important in the teaching and learning of mathematics in schools and the MDGs project mission. According to Ojerinde (1999), mathematics is a tool for use in science, technology, and industries; and if mathematics is really the tool for use in science, technology, and industries, then the mathematics curriculum should be such that will have leading contents to those areas and involvement of competent mathematics teachers that will be abreast with the content. Mathematics teachers acknowledge the various roles of the Millennium Development Goals especially at the Basic Education Level but are not sure whether these cuts across teachers and subjects. This study, therefore, intends to investigate the mathematics teachers assessment of the various roles of the Millennium Development Goals (MDGs) in Ondo state primary and junior secondary schools in implementing the 9-year Basic Education Mathematics curriculum and bearing in mind the BE goals as re-training of teachers, provision of classroom blocks and libraries, and provision of laboratories and laboratory equipment.

1.1 Purpose of the Study

The purpose of this study was to:

1. Find out the perception of the Mathematics teachers about the Millennium Development Goals (MDGs) training and re-training workshops in the implementation of the 9-year Basic Education Mathematics Curriculum
2. Find out the assessment of the mathematics teachers about the MDGs training and re-training workshops in the implementation of the 9-year BE Mathematics curriculum
3. Find out the assessment of Mathematics teachers about MDGs provision of infrastructural facilities/instructional materials to schools to improve the teaching of mathematics

1.2 Research Questions

1. What is the perception of Mathematics teachers about the Millennium Development Goals (MDG) role of training and re-training of teachers?
2. What is the assessment of mathematics teachers about the MDGs role of training and re-training workshops in the implementation of the mathematics curriculum?
3. What is the assessment of the Mathematics teachers about the MDG provision of infrastructures/instructional materials to schools to aid/improve the teaching and learning of mathematics?

2. Research Design: The study adopted the survey research design because the study involved the use of representative sample of the population.

2.1 Area of Study: The study covered all the three hundred and twenty-five (325) public primary and junior secondary schools in southern senatorial district of Ondo state in the Western Part of Nigeria. The state is divided into three political senatorial districts of south, central and north. With each senatorial district consisting of six (6) local government areas, totaling eighteen (18) local governments in all.

2.2 Population and Sample: The population of the study comprised of all the public primary and junior senior secondary school mathematics teachers in the six local government areas of the senatorial district. Due to the large nature of the population, simple random sampling technique was employed to select two local government areas of the senatorial district. In each selected local government area, all the public primary and junior secondary school mathematic teachers were used. A total of four hundred and thirty (430) primary and junior secondary school mathematics teachers responded to the researchers' developed and validated instrument.

Instrument for data Collection: The instrument used for this research was tagged '**Mathematics Teachers' Assessment of MDGs Questionnaire**' (MTAMQ) made up of two sections A and B. Section A comprises of the demographic data of the respondents and Section B comprised of twenty-four items to elicit information from respondents on their perception and assessment of the various roles of the MDG towards improving teaching and learning mathematics in schools on a four points likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) that were scored respectively as 4, 3, 2, and 1. The MTAMQ was validated by two experts in research and evaluation. The validated instrument was trial tested using ten schools from one of the local governments outside the study area using Cronbach Alpha coefficient which gives a reliability coefficient of **0.78**

2.3 Data Analysis: The instrument was administered by the researcher with the help of some teachers from the selected schools. The result of the data were analysed mainly using frequency counts, simple percentage, Mean (M) and Standard deviation (Sd)

3. Result

The results of the study are as shown below;

The result on the table 1 showed that, majority of the Mathematics teachers who responded to the instrument had a good perception of the roles of the Millennium Development Goals in recent times. The result showed that, the mean scores of the respondents ranged between **3.40** and **3.91** and Standard deviation ranged between **1.84** and **1.91**. This is above average if the average or bench mark is put at **2.50**. This corroborates the fact that, respondents i.e. the mathematics teachers had a positive and very good perception of the roles of the Millennium Development Goals in training and re-training of teachers ensuring the full implementation of the 9-year Basic Education Mathematics Curriculum.

The result on table 2 revealed that, majority of the mathematics teachers who responded to the items on the instrument had a positive assessment of the roles of the Millennium Development Goals (MDGs) in training and re-training of teachers in Primary and Junior Secondary schools. The analysis showed that, the mean scores of the respondents in all the items ranged between **3.40** and **3.92** which is above the bench mark (average) of 2.50 and Standard Deviation (Sd) ranged between **1.84** and **1.92**. These indicates that, the respondents had rated the MDGs positively on training and re-training of teachers and having the capacity to effect changes that could lead to realization of the objectives of the 9-year Basic Education Mathematics curriculum in Nigeria.

The result on table 3 showed that, majority of the mathematics teachers who responded to items on the instrument had a positive assessment of the MDGs provisions of infrastructural facilities, instructional materials, etc to schools. The analysis revealed that, the mean scores of the respondents in all the items ranged between **3.29** and **3.55** and Standard deviation (Sd) ranged from **1.81** to **1.88**. These indicates that, the respondents had rated the MDGs high on provision of infrastructural facilities and instructional materials to schools showing the capacity to effect the required changes to actualize the dreams of the 9-year Basic Education Mathematics Curriculum in the country.

3.1 Discussion

The findings of this study revealed that the Mathematics teachers at the Basic Education level had good perception of the roles of the MDGs building the capacity of the teachers i.e. training and re-training to prepare them for the demands of the 9-year Basic Education Mathematics Curriculum in Nigeria. The respondents also

believed that all the teachers should be involved in the workshop. This position might be due to the fact they recognised the essence of the workshop. This finding is in agreement with Ahmed (2006) and Ivowi (2008), who observed that the re-training of the teachers started in 2006 when 180,000 teachers were selected for such workshop by MDG in collaboration with the National Teachers Institute (NTI). Having noticed the advantages inherent in the workshop, the teachers who were not opportuned to be among those selected were eager and wanted the opportunity to get across to all the teachers.

The findings of the study also revealed that, mathematics teachers had a positive assessment of the various roles of the MDG in improving teaching and learning in primary and junior secondary schools. This is because teachers should be trained to acquire the needed knowledge, skills and disposition required for improvement in the pupils' performance. They realised that if they were not exposed to changes happening around the world, they might be left behind. The implication is that government should provide opportunity that would enable Nigerian teachers at par with their colleagues in other countries. The findings of this study also showed that mathematics teachers in primary and junior secondary schools had a positive assessment of the roles of the MDG's provision of infrastructural facilities, instructional materials and constructional classroom blocks among others to schools at the Basic level. This imply that teachers would be conversant not only with the instructional materials/strategies that are learner centered but this will enable these teachers to acquaint themselves with the instructional materials/strategies that lead to participatory learning, learning by doing and by experience and the aesthetics of the new environment will also aid improved teaching and learning.

4. Conclusion and Recommendations

The effective implementation of any result oriented curriculum like the 9-year Basic Education Curriculum in Nigeria to achieve its desired goals cannot be a one man affair. It needs the collaborative efforts of government, teachers, private individuals and non-governmental organizations. Therefore the roles of the Millennium Development Goals (MDGs) in the implementation of the 9-year Basic education Curriculum does not come as a mirage. MDGs have come in the area of adequate teacher preparation and provision of infrastructural facilities to improve teaching and learning at the Basic Education level of the curriculum. This is to ensure that these teachers can effectively help learners develop the ability to seek, maintain and protect others and to resolve conflict without creating atmosphere of insecurity. Therefore the following recommendations are made:

- The training of teachers by MDG should cut across all subjects at the Basic Education level and all teachers should be trained.
- Regular training programmes /seminars and workshops should be organized for Mathematics all teachers to enable them acquire the pedagogical disposition for implementing the 9-year Basic Education curriculum in Nigeria.
- The multi-grade instructional approach should be incorporated into the training workshops to solve the problem of inadequate teachers needed for the Basic Education Curriculum.
- Follow up activities should be introduced to ensure that what the teachers learnt at the training workshops were implemented after the workshop.
- Further research should be carried out on mathematics teachers' assessment of the role of the MDGs in the implementation of the senior secondary school mathematics curriculum.
- Also, researchers are encouraged to research on other subjects' curricula like English Language, Biology, Civic Education, and so on.

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Table 1 Perception of Mathematics Teachers about the Roles of Millennium Development Goals in the Implementation of the 9-year Basic Education Mathematics Curriculum

S/N	ITEM	SA	A	D	SD	M	Sd
1.	MDGs workshops involves interaction with the mathematics teachers to change their approach to teaching from teacher centered to learner centered as the curriculum demands	268	108	33	21	3.45	1.85
2.	MDGs workshops are intensive teacher professional development programmes	250	150	20	10	3.49	1.87
3.	MDGs workshops as intensive teacher professional development programmes should involve all mathematics teachers	310	90	22	08	3.63	1.91
4.	MDGs workshops on training and retraining of mathematics teachers should be done every year	275	89	31	35	3.40	1.84
5	MDGs workshops for mathematics teachers enables them to learn new approaches for facilitating active learning of the subject	310	100	15	05	3.66	1.91
6.	Mathematics teachers need MDGs training and retraining workshops to provide opportunities for them to learn from one another as it concerns the 9-year Basic Education curriculum	264	123	23	20	3.47	1.86
7.	MDGs workshops enable the mathematics teachers to update their knowledge and fill the gaps on the subject as contained in the curriculum	276	134	15	05	3.58	1.89
8.	MDGs workshops for teachers ensures the realization of the objectives of the Basic Education Curriculum	256	124	47	03	3.47	1.86
9.	MDGs workshops aims at improving the performance of mathematics teachers through the use of instructional materials	262	108	42	18	3.43	1.85
10.	MDGs workshops aims at improving the performance of mathematics teachers through the improvisation of instructional materials	260	112	52	06	3.46	1.86

Table 2 Mathematics Teachers' Assessment of the Roles (Training and Re-training Workshops) of MDGs in the Implementation of the 9-year Basic Education Mathematics Curriculum

S/N	ITEM	SA	A	D	SD	M	Sd
1.	MDGs project involves re-training of teachers including the mathematics teachers	310	100	10	10	3.65	1.91
2.	MDGs workshops enables the mathematics teachers to learn new approaches for facilitating active learning of the subject	287	113	20	10	3.57	1.89
3.	MDGs workshops will bring about effective learning by the pupils at the 9-year Basic education level.	270	100	30	30	3.42	1.85
4.	MDGs workshops ensures that mathematics teachers change their methods of teaching to new approaches	305	105	-	20	3.62	1.90
5.	MDGs workshops provide opportunity for mathematics teachers to fill the gaps in their subject matter knowledge of mathematics	275	125	10	20	3,52	1.89
6.	MDGs workshops provide opportunity for Mathematics teachers to learn from one another	300	104	06	20	3.59	1.90
7.	MDGs workshop will improve the mathematics teachers use of instructional materials	290	100	30	30	3.40	1.84
8.	MDGs workshop will ensure the realization of the objectives of the 9-year Basic Education Mathematics Curriculum	300	105	15	-	3.69	1.92

Table 3. Mathematics Teachers' Assessment of the MDGs Provision of Materials/Facilities to Schools to Aid/Improve the Teaching and Learning of Mathematics

S/N	ITEM	SA	A	D	SD	M	Sd
1.	MDGs provision of instructional materials to schools aid the teaching and learning of mathematics	272	90	52	16	3.44	1.85
2.	MDGs provision of infrastructural facilities to schools improves the teaching and learning of mathematics	260	80	46	44	3.29	1.81
3.	MDGs provision of infrastructural facilities to schools should go round all the schools	276	100	24	30	3.44	1.85
4.	MDGs construction of Classroom blocks to schools is a moral buster to effective teaching and learning	256	97	50	27	3.35	1.83
5.	MDGs construction of Classroom blocks to schools should cut across all the Primary and Junior Secondary Schools	240	127	43	20	3.36	1.83
6.	MDGs support in the distribution of the 9-year Basic Education Mathematics Curriculum to schools aid the teaching of the subject	309	72	26	23	3.55	1.88

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