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Influence of Mdgs Capacity Building Workshop on Pupils' Performance in Learning Mathematics in Zamfara State, Nigeria.

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Abstract
Teachers' performance in teaching mathematics had over the years been persistently poor and the corresponding effect had been noticeable on students' performance which resulted in having problem of examination with majority of the students. In order to address the issue, MDGs came in to assist by sponsoring capacity building workshops for primary school teachers so that the problem would be tackled from the grassroots. The paper as such explores the impact of this capacity building workshop and how it assists teachers since its inception on how to increase their level of competence which would help them when they come deliver lesson in the class. Two instruments were used for the study; named Teacher Competence Test (TCT) and Pupils' Performance Test (PPT). The result of the study shows that there is difference in the performance of pupils taught by teachers that attended the MDGs capacity building workshop. Sixty (60) teachers were selected purposively for the study and four hundred and eighteen (418) pupils were selected to form the sample of the students. Hypotheses stated in the study were tested at 0.05 level of significance. After testing the hypotheses, it was found that both the performances of teachers and pupils were tremendously increased as a result of the capacity building workshop. The paper finally offers recommendations on how to help teachers increase their performance by exposing them to more rigorous academic training and the programme should be extended to senior secondary school teachers.

Introduction
The relevance of education to an individual cannot be over emphasized and attracted quite a number of researches and contributions from varying individuals. For example, it should be known that there is no country which has succeeded without educating its people (Jayeola-Omoyeni, 2009). No country in the world can harness the full potentials of its people without committing them to standard education that is capable of making them educated to that extent. Education is the most potent vehicle for the development and empowerment of an individual, economic, political, social development, national growth and enthronement of peace (Exam Ethics Project, 2005).
Societies of the world heavily rely on their human resources for the development in most of the spheres of human endeavour. As such, education must be the priority of authorities so as to ensure the realization of such development. This is why it was clearly stated in the National Policy on Education (2004) that the main purpose of education is to develop individuals so that they can be useful to their family and the society at large (Dungurawa, 2009). Meanwhile, government over the years tried to provide education and make it accessible to all and sundry. According to Country Self-Assessment Report (2008), Nigeria adopted free Universal Primary Education (UPE) as a national policy in the 1970s, which led to massive increase in primary school enrolment. Because of the realization by the government that national development could only be achieved through the instrument of education, in 1999, the federal government under the leadership of Chief Olusegun Obasanjo decided to embark on Universal Basic Education (UBE) in response to national needs and aspiration, and in response to international calls for democratization of education (Fasasi, 2007). These are few of the attempts made by Nigerian government to make sure Nigerian citizenry are provided with education which will be universally accepted in all its ramifications.
In order to complement the effort of Nigerian government in the provision of this education, Millennium Development Goals (MDGs) partner with the government so as to make sure that the attainment of UBE goals and the achievement of MDGs goals are made possible. This is why Paulley (2009) asserted that accordingly, no individual or state can go far without education, including the achievement of MDGs, for it improves the efficiency of the economic system and promotes changes from one hierarchy to another. With specific reference to MDGs' two out of the eight goals, this has direct bearing to education. That is to achieve Universal Primary Education. For all this to be possible, special attention has to be given to the knowledge of Mathematics, perhaps why MDGs made it one of the subjects it focused attention, in terms of capacity building workshops for teachers of Mathematics. As an integral part of the system (Education) in general, it has been realized that there is ever increase in hatred of the subject of Mathematics by its learners at all levels, which according to Kurumeh, Agogo and Usman (2010) are because environment in which the teaching is to be made has not been made conducive for the learning to take place. The incessant failure of Mathematics exams at different levels, like it was pointed out by Oguntuase, Awe and Ajayi (2013) which according to them is consequent upon the poor performance of students in mathematics which is a global phenomenon and also prevalent in the third world countries in which Nigeria is not an exception. This incessant failure in mathematics made researchers in mathematics education to strive to find a solution to the problem by considering a number of factors; one of which was considered in a

study to be inappropriate method of teaching (Achor, Imoko & Uloko, 2009). The changes in curriculum decision by stakeholders in the field of Mathematics (Tsafe, 2014), the continuous lack of readiness by the administrators to implement policies that would be aimed at ameliorating these problems prompted the researcher to undergo a study so as to determine if the problem to be investigated is resolvable or otherwise. In the course of the research, teachers' efficacy and performance in teaching Mathematics would be determined as a result of the capacity building workshops organized by Millennium Development Goals.

Theoretical Framework

Theoretically, teacher efficacy and performance has emerged as an important construct in the teacher education over the past 25 years. It has as such been defined as teachers' beliefs in their ability to actualize the desired outcomes (Wheatley, 2005). Teacher efficacy has been linked to teacher effectiveness, performance and teaching skills and appears to influence students in their achievement, performance, attitude and affective growth. Founded in social cognitive theory, teacher's self efficacy beliefs have repeatedly been associated with positive teaching behaviours and students' outcome. The theory was believed to have been propounded by former APA President (1974) and current Stanford Professor Albert Bandura. An important factor in the determination of a teachers' sense of efficacy is experience or what Bandura (1977), a leader in the development of self efficacy theory, calls performance accomplishment. In this regard, Hoy (2000) suggested that some of the most powerful influences on the development of teacher efficacy and performance are mastery experiences during student teaching and foundation year. As such, the first years of teaching could be critical to the long term development of teacher efficacy and performance in the classroom. To be effective and perform well in teaching Mathematics, there must be a mastery of the subject matter so much so that the concepts would be delivered to the students efficaciously well.

MDGs at a Glance

The year 2000 was believed to be the year when Millennium Development Goals programme started. This was made possible following the Millennium Summit in 2000 where the world leaders who attended the summit adopted the United Nations Millennium Declaration. The approval of MDGs to be operational across the globe was one of the outcomes of the Millennium Summit. It happened in New York, USA. This was after a report presented by the Secretary-General of the United Nation then Mr. Kofi Annan entitled "we the people" the role of the United Nations in the 21st century. In attendance during the summit were 193 United Nations member states and at least 23 international organizations, which have all agreed to work in the realization and achievement of the goals. Because of the assertion made in the Millennium Declaration that every individual has the right to dignity, freedom, equality, a basic standard of living which includes freedom from hunger and violence, the MDGs were established to operationalize these ideas by setting targets and indicators to be achieved in fifteen year timeline i.e. 2015. The MDGs set to be achieved by 2015 are 8 as could be seen below:

1. To eradicate extreme poverty and hunger
2. To achieved universal primary education
3. To promote gender equality and empower women
4. To reduce child mortality rate
5. To improve maternal health
6. To combat HIV/Aids malaria and other diseases
7. To ensure environmental sustainability
8. To develop global partnership for development

Statement of the Problem

It is believed that Nigerian education system is confronted with quite a number of setbacks and crisis (Gidado, 1990). By crisis, it means failure of the education system to effectively meet the needs and aspiration of the society. There is a gap according to Junaid (1991) between the needs and requirements of the society and the concrete performance of the education system. One of the strategies to adopt in order to bridge that gap is the improvement in the standard of Mathematics Education at all levels in the country. This is because Mathematics virtually has application in every sphere of educational system. There is a persistent increase in the level of students' poor performance in the subject which is attributed to the level of educational attainment of the teachers themselves. Thus, the strategies to use in order to improve students' performance in Mathematics has always been one of the problems confronting Mathematicians, Mathematics Educators, teachers of Mathematics and parents alike. For instance, students tend to lose interest in the study of the subject mainly due to the method of teaching it. This has subsequently made the performance of students in Mathematics to be perpetually poor. The persistent and continued poor performance of students in the subject has further created more vacuum between the subject and its learners. In an attempt to remedy the problem therefore, a research of this nature has to be embarked upon so as to establish at the end whether the problem lies with the teacher efficacy and performance or otherwise. As part of its effort to contribute in reducing the problem, MDGs felt it is highly

needed to commit its resources in engaging teachers at basic level with a capacity building workshop on some subjects; Mathematics being one of them, so that the problem would be tackled from the grassroots and contribution could be made on how best to enhance the competence of teachers in handling especially areas that are considered difficult by the teachers.

Purpose of the Study

The purpose of this study was to examine the impact of MDGs capacity building workshop on teachers' performance in teaching mathematics in Zamfara State, Nigeria. Specific objectives include:

- To find out the performance of pupils taught by teachers who attended the MDGs capacity building workshop and those who did not.

Research Hypothesis

$Ho_{1:}$ There is no significant difference between the mean performance of pupils taught by teachers who attended the MDGs capacity building workshop and those who did not.

Methods

Research Design

The research design used in this study was a quasi experimental research design. It involves pre-test post-test at two different levels. i.e. at pupils' level on one hand and teachers' level on the other. At pupils' level, experimental and control groups of the pupils were observed. As for the teachers, differences between those who attended the MDGs capacity building workshop and those did not attend were observed. In this regard therefore, this research design was used to find the influence of MDGs capacity building workshop on teachers' performance in Zamfara State, Nigeria.

Participants

The participants in the study comprises of mathematics teachers and students in primary schools in Zamfara State. The total number of teachers that participated in the capacity building workshop as at year (2012) was two thousand and fourty six (2,046) from the four educational zones of the State. The population also included all current junior secondary school students in the state, numbering twenty nine thousand six hundred and twenty six (29,626). The number of male students in the population is twenty thousand five hundred and thirty six (20,536) whereas the number of female students in the population is nine thousand and ninety (9,090). The following tables represent the participants in both the category of teachers and students.

Table 1. Teachers who participated in the 2012 MDGs capacity building workshop in Zamfara State

S/N	ZONE	No of Participants	No of Resource Persons
1.	Gusau	682	12
2.	Talata-Mafara	496	12
3.	Anka	436	12
4.	Kaura-Namoda	432	12
Total	**Four (04)**	**2046**	**48**

Source: National Teachers' Institute Zamfara State office, Gusau (2012).

Table 2. Distribution of students by zone in the studied population

S/N	Zone	No. of male students	No. of female students	Total
1.	Gusau	9,132	5,356	14,488
2.	Kaura-Namoda	5,140	2,064	7,204
3.	Anka	2,060	716	2,776
4.	Talata-Mafara	4,204	954	5,158
Total	**Four (04)**	**20,536**	**9,090**	**29,626**

Source: Zamfara State Universal Basic Education Board (2013)

From the Table 1 above, from the population of teachers for the study, 2,046, the minimum sample size to be used is (322) as advocated by (Morgan & Krejcie, 1970). Similarly, in Table 2, the population of pupils for the study which is 29,626, the minimum sample size to be used 379. Depending on the population of the school, the number of students selected from each was drawn proportionate to the school's population. In this regard, 418 pupils were proportionately selected from five (5) schools that were randomly selected. Table 3 shows the distribution of the selected students from the schools to participate in the study.

Table 3. Randomly Selected Schools and Sample Size of Students Selected for the Study

S/N	Name of School	Sample Size
1.	Mazawaje Model Primary School, Tsafe	86
2.	Ali Akilu Model Primary School, Tsafe	79
3.	Nizzamiya Model Primary School, Tsafe	81
4.	Army Children School Tudun Wada, Gusau	84
5.	Ibrahim Gusau Model Primary School, Gusau	88
Total		**418**

From this sample, 218 formed the experimental group while 200 pupils formed the control group.

Instruments

The following instruments were used for the study: An Achievement Test named Pupils Performance Test and the Teacher Competence Test. These instruments were developed by the researcher. In both instruments, the participants (i.e teachers and students) were asked to provide answers to the provided options. To measure students' academic achievement, the Pupils' Performance Test consisted of 20 objective questions which were extracted from the MDGs teaching manual used by the resource persons while taking the teachers through the workshops sessions. The content areas covered include, Number and Numeration (N/N), Algebra (AG), Geometry (GM), Trigonometry (TR) and Statistics and Probability (S/P). A sample question for Pupils' Performance Test is as follows

1. If shirt cost N24, what is the cost of 5 shirts
   a) N120 b) N130 c) N113 d) N100

The Teacher Competence Test was designed to measure the performance of teachers after undergoing the MDGs capacity building workshop. This instrument consisted of 40 questions. The following is a sample question for Teacher Competence Test.

1. Convert 10110_2 to base 10

A) 20_2 B) 30_2 C) 22_{10} D) 25_{10}

Procedure for Data Collection

The data were collected from the respondents through the administration of the instruments. In this regard, the Pupils Performance Test was administered as pre-test to the sample of the students selected for the study. The Teacher Competence Test was administered as pre-test to the sample of the teachers selected for the study.

The MDGs capacity building training workshop was delivered to the selected teachers as the treatment. The programme was done for nine weeks. This was considered by the researcher to be the time substantial enough to achieve the stated objectives of the research. Hours of interaction between the participants and the resource persons ranged between four to six hours daily.

After the MDGs training workshops, teachers taught their students for five weeks during which only experimental group were taught by teachers who attended the MDGs capacity building while the control groups were taught by teachers who did not attend the MDGs capacity building workshop. At the of the instruction sessions in both the experimental and the control groups, the instrument was administered again to both the experimental and control groups as the post-test.

Results

The first research hypothesis stated that there is no significant difference between the mean performance of pupils taught by teachers who attended the MDGs capacity building workshop and those who did not. The results are presented in Table 4

Table 4. Pupils' Performance Post test Analysis

Group	N	Mean	Standard Deviation	df	t_{cal}	t_{tab}	Decision
Treatment	218	24.67	4.94	416	93.2	1.96	Significant
Control	200	18.50	5.02				

Note. Level of Significance = 0.05

Table 4 shows the calculated *t* of the performance of pupils taught by teachers who attended the MDGs capacity building workshop and those who did not. It reveals that the $t_{calculated}$ is is greater than $t_{critical}$ and as such the hypothesis which stated that there is no significance difference between the mean performance of pupils taught by teachers who attended the MDGs capacity building workshop and those who did not is hereby rejected. It can therefore be concluded that the performance of pupils taught by teachers who attended the MDGs capacity building workshop is significantly higher than the performance of pupils taught by teachers who did not attend the capacity building workshop.

The second research hypothesis stated that there is no significant difference in the mean performance of teachers before and after the MDGs capacity building workshop. The results for this hypothesis are presented below

Table 5. Analysis of Teacher Competence Test before and after the MDGs capacity building workshop

Group	N	Mean	Standard Deviation	df	t_{cal}	t_{tab}	Decision
Pre-test	25	4.20	1.05	43	2.93	1.96	Significant
Post test	20	5.10	1.275				

Note. Level of Significance = 0.05

Table 5 shows that by comparing calculated *t*-value with critical value of *t*, the calculated value *t* is greater than the table value of *t*, indicating that the hypothesis was rejected. It can as such be concluded that the performance of teachers after they have undergone MDGs capacity building workshop is statistically higher than before attending the workshop.

Discussions

The study was aimed at investigating the influence of MDGs capacity building workshop on teachers' and pupils' performance in Zamfara State. The variables investigated are MDGs capacity building workshop and teachers' and students' performance which are independent and dependent variables respectively. The result found that both teachers' and pupils' performance in mathematics improved after the teachers participated in the MDGs capacity building workshop.

Similar studies were conducted in the past that had to do NTI/MDGs capacity building workshop and performance of teachers and pupils. For instance, in a study conducted by Yusuf, Ajidagba and Olumorin (n.d) to determine the stakeholders' assessment of Millennium Development Goals (MDGs) capacity building of basic school teachers for the implementation Universal Basic Education in Nigeria, it was found that basic school teachers were enthusiastic and passionate about the NTI/MDGs capacity building programme. According to them, majority of the stakeholders were of the opinion that MDGs would bring about improvement of teaching learning in basic schools. Majority of respondents in the study were of the opinion that basic school teachers should always be involved in the MDGs project so as to enable them acquire the necessary pedagogical skills for the achievement of the objectives of Universal Basic Education in Nigeria.

Similarly, the findings of this research work is in agreement with the findings of Odeleye, Okunola and Akinnola (2012) whose study was to determine the effects of NTI/MDGs capacity building workshops for primary school teachers on pupils' academic achievement in Ibadan. Their study however revealed that there is significant difference in the academic performance of pupils taught by teachers who participated in the MDGs/NTI capacity building workshops and pupils taught by teachers who did not participate in the workshop. Furthermore, Adeniyi, Hassan and Ogundele (2013) in their study on the effect of MDGs/NTI primary school teachers' retraining workshop on pupils' achievement in mathematics in Kwara state, Nigeria found that students taught by teachers who attended the retraining programme performed better than those taught by teachers who did not attend the programme. This is found to be in agreement with this study.

Recommendations

- The capacity building workshop for mathematics teachers should be more rigorous so that teachers will be kept to the track of current issues in mathematics and this will go a long way in enhancing their performance in teaching mathematics.
- The number of teachers attending the MDGs mathematics capacity building workshop should be increased so that within the shortest time possible, all mathematics teachers would be exposed to all the syllables taught at MDGs workshop. This will enable virtually all mathematics teachers to be more competent in teaching mathematics and subsequently the achievement of pupils in mathematics would be increased.
- Provision of more instructional materials for teaching mathematics should be ensured by government what teachers must have acquired from the workshop would be properly put in practice while teaching the pupils.
- The gesture of MDGs of offering this training workshop opportunities should be extended to senior secondary school teachers since the focus now is on teachers at basic level.

Conclusion

Teachers' performance in teaching mathematics is extremely important that the attention of MDGs had to be drawn to come to the aid of primary school teachers in terms availing them with the opportunity to partake in the capacity building programme so that they would become acquainted with skills necessary to excel in the profession. This is through the provision of well trained, seasoned and professionally trained teachers to take the participating teachers through the sessions of the programme.

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