Teaching of Mathematics to Physically Challenged Students in Secondary Schools (A Case Study of Kwara State, Nigeria)

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Abstract
The impact of mathematics in everyday life activities cannot be underestimated. Despite its importance to the society, the teaching of mathematics in senior secondary schools is associated with different problems. Therefore, the study examined the problems encountered by secondary school teachers in the teaching of mathematics to physically challenged students in Kwara State, Nigeria. The study was a descriptive study of the survey type. The sample for the study consisted of ninety-nine (99) Mathematics teachers of physically challenged secondary schools students in Kwara state. The instrument used for the study was a researchers-designed questionnaire consisting of structured questions which was validated and reliability index of 0.84 was obtained. The data obtained was analyzed statistically through the use frequency, percentages and chi-square statistics. Findings from the study showed that secondary school mathematics teachers have numerous problems which make the teaching of mathematics to physically challenged students more challenging. The problems identified were teachers-student relationship, Teachers' approach and Methodology, Administration and School Environment. The finding from the study also indicated that Mathematics teachers' gender, experience and qualification do not influence the teaching of mathematics to physically challenged students. It was therefore recommended among others that good learning facilities should be readily available in all secondary schools and accessible for teachers as this will facilitate better and easier teaching of mathematics especially to the physically challenged students.

Keywords: Education, Mathematics, Special Education, Physically Challenged Students

Introduction

Education as a concept has been defined by different culture and societies based on their different conception of what education are and what it aspire to achieve. Hence, member of specific cultural orientations define education as well as it aims according to their cultural peculiarities and experiences (Abimbola & Abolade 2009). Despite the differences in people's perception, it is still possible to advance a working definition. In this respect, Akpomedaye (2010) referred to education as a process, product and as a discipline (Such as Mathematics, English Language, Social–Studies, Computer - Science and lot of others).
Mathematics is an important aspect of education, which brings about the study of numbers and counting. Salman (2005) described mathematics as a versatile tool in the study of sciences,

humanities and technology and its usefulness in human activities cannot be underestimated because it is the precursor for scientific discoveries and inventions.

Mathematics is the totality of our everyday process (Lewis, 2000). Lewis observed that, far too often, the way in which students learn Mathematics is equivalent to building a scaffold without ever constructing the building that the scaffolding is intended to support. The real 'building' in the Mathematics sense is the true mathematical understanding, the true ability to think, perceive, and analyze mathematically.

Special Education has been described as classroom or private instructions involving unconventional techniques, materials, exercises, facilities and subject matter designed for children and adults who have physical deformities, behavioral disorders or learning disabilities (Osakwe, 2010). Mba (1997) opined that special education is an ideal general education in which individual differences are considered and provided for. Special Education is also a customized educational program, designed to meet the unique needs of persons with special needs that the general education program cannot cater for (FRN, 2013:35).

The Federal Government of Nigeria gives a comprehensive definition, where it defines special Education as:

> *the Education of children and adults, who have learning difficulties because of different kinds of disabilities-blindness, partial sightedness, deafness, hardness of hearing, mental retardation, social maladjustment and limb deformity or malformation, due to circumstances of birth, inheritance, social position, mental and physical health patterns, or accident in later life.* (FRN, 2013:35)

Oladejo (2011) posits that Students with physical challenges, otherwise known as People with special needs are those people with one form of disabilities or the other, capable of limiting their involvement and participation in the regular educational programs, and subsequently affect their academic performance and functionality in the society. They can be classified into eight, with respect to the type and nature of their disability problems. These classifications are; The Hearing Impaired, Visually Impaired, People with Speech Disorders, Emotionally Disorder, Mentally Retarded, Physically Disabled, People with Learning Disabilities and People with Multiple Disabilities.

Problems of teaching mathematics to physically challenged Students largely depends on the teacher's attitude towards pupils with special needs, level of disabilities of the students and on the resources available to them (Williams, 2006). In quite a number of studies, the attitude of teachers towards educating pupils with special needs has been put forward as a decisive factor in making schools more effective. Teachers tend to favor students whom they can manage over those students whom they perceive to be more disruptive in the classroom (Idol, 2006).

The factors mentioned above are potentially relevant in the teaching of mathematics to the physically challenged students in secondary schools. At the classroom level available instruction time, the attitude, knowledge and skills of teachers and teaching methods and materials can be distinguished as important prerequisites for teaching mathematics to the physically challenged students. The study take to consideration teachers' variable such as gender, year of teaching and teachers' qualification influence on teaching mathematics to physically challenged students.

Statement of the problem

Quite a number of studies have been carried out on the teaching of students with physical challenges in Nigeria. Among the studies are; Eskay, Micheal and Angie Oboegblem (2000) whose study was on the learner with physical challenges within and out of school as

compared with their normal school counterpart and recommended that the right of the physically challenged child should not be trampled on in the society. Afolabi and Adeleke (2011) focused their study on educating students with physical challenges in Nigeria and charged private individuals and Non-Governmental Organizations to establish more special schools as well as vocational and rehabilitation centers. Educational materials and facilities that would be needed by students with disabilities should be provided at affordable prices and be within the reach of the poor.

However, all these studies on students with physical challenges are silent on issues pertaining to the problems of teaching mathematics to physically challenged students. This study therefore investigated the problems of teaching mathematics to physically challenged students in Kwara state, Nigeria.

Research Questions

The main purpose of this study was to investigate problem of teaching mathematics to the physically challenged students in secondary schools in Kwara state, Nigeria. The following research questions were raised and answered in the study;

1. Does the Teacher-Students Relationship influence the teaching of mathematics to physically challenged students?
2. What is the influence of School Administration on the teaching of mathematics to physically challenged students?
3. What is the influence of School Environment on the teaching of mathematics to physically challenged students?
4. Do Teacher's approach and methodology influence the teaching of mathematics to physically challenged students?
5. Do Teacher's gender, experience and qualification influence their teaching of mathematics to physically challenged students?

Research Hypotheses

The following hypotheses were formulated and tested at 0.05 significance level:

H_{01}: Teacher's gender does not significantly influence the teaching of mathematics to physically challenged students.

H_{02}: Teacher's experience does not significantly influence the teaching of mathematics to physically challenged students.

H_{03}: Teachers' qualification does not significantly influence the teaching of mathematics to physically challenged students.

Methodology

The study was a descriptive research of the survey type. The target population consists of teachers in physically challenged secondary school in Ilorin. Ninety-nine (99) Mathematics teachers of physically challenged students in Ilorin formed the sample for the study. The instrument for this study was researchers-designed questionnaire which was validated by two Mathematics Educators and one Science Educator, all from University of Ilorin, Ilorin, Nigeria. The reliability coefficient for the instrument was 0.84 and it was obtained using Cronbach Alpha Coefficient. The items on the questionnaire were answered by the respondents by ticking strongly agree, agree, disagree and strongly disagree. The research questions were answered

using frequency count and percentage while hypotheses were tested using Chi-Square analysis technique at 0.05 significant level.

Results

Research Question 1: What is the influence of Teacher - Students Relationship on teaching mathematics to physically challenged students?

Table 1: Frequency and percentage of teachers' feedback on the Teacher- Students relationship

Response	Frequency(f)	Percentage (%)
Agree	89	89.90
Disagree	8	8.10
Omitted	2	2.02
Total	99	100.0

Table 1 shows that majority of the teachers agreed that teacher-students' relationship influence the teaching of mathematics to physically challenged students as this response has the highest frequency of 89 representing 89.9% of the respondent. Also, it was revealed that few of the teachers disagree that teacher-students' relationship had any influence on the teaching of mathematics to physically challenged students as this response has a frequency of 8 representing a percentage of 8.1% while the 2 responses omitted accounted for the remaining 2.02%.

Research Question 2: What is the influence of School Administration on teaching mathematics to physically challenged students?

Table 2: Frequency and percentage of teachers' feedback on the influence of School Administration

Response	Frequency(f)	Percentage (%)
Agree	73	73.70
Disagree	22	22.20
Omitted	4	4.03
Total	99	100.0

Table 2 shows that Majority of the teachers agrees that the School administration influence the teaching of mathematics to physically challenged students as this has a frequency of 73 representing 73.7% of the respondents. Also it was revealed that some of the teachers disagrees that the School administration influence the teaching of mathematics to physically challenged students as this has a frequency of 22 representing 22.20% of the respondents while the 4 responses omitted accounted for the remaining 4.03% of the respondents.

Research Question 3: What is the influence of School Environment on teaching mathematics to physically challenged students?

Table 3: *Frequency and percentage of teachers' feedback on the influence of School Environment*

Response	Frequency(f)	Percentage (%)
Agree	85	85.9
Disagree	13	13.1
Omitted	1	1.0
Total	99	100.0

Table 3 shows the responses on the influence of School Environment on teachings mathematics to physically challenged students. The result revealed that the influence of school environment on teaching mathematics to physically challenged students was high since majority of the teachers agrees with this response having a frequency of 85 with a percentage of 85.9%. The table also reveals that a few teachers disagree that the School Environment plays a critical role on teaching mathematics to physically challenged students with this response having a frequency of 13 representing 13.1% of the responses while the 1 responses omitted accounted for the remaining 1.0% of the responses.

Research Question 4: What is the influence of teacher's approach and methodology on teaching mathematics to physically challenged students?

Table 4: Frequency and percentage of teachers' feedback effects of teacher's approach and methodology

Response	Frequency(f)	Percentage (%)
Agree	86	86.9
Disagree	12	12.1
Omitted	1	1.0
Total	99	100

Table 4 shows the response on the influence of Teacher's approach and methodology on teaching mathematics to physically challenged students. The result shows that the teacher's approach and methodology is very vital in teaching mathematics to physically challenged students. It was revealed that majority of the teachers agree that teacher's approach and methodology significantly influence the teaching of mathematics to physically challenged students as this response has the highest frequency of 86 representing 86.9% of the responses. Also, a few of the teachers disagrees that the teacher's approach and methodology does not influence teaching of mathematics to physically challenged students as this response has a much lower frequency of 12 representing 12.1% of the responses while the 1responses omitted accounted for the remaining 1.0% of the responses.

Research Question 5: Does teacher's gender, experience and qualification influence their teaching methodology? The corresponding hypothesis was hypothesis below. These moderating variables were analyzed individually.

Research Hypothesis 1: Teachers' gender do not significantly influence the teaching of mathematics to physically challenged students.

Table 5: Chi-square analysis on gender influence on teaching of mathematics to physically challenged students

	Agree	Disagree					
Gender	**Observed (Expected)**		**Total**	**χ^2**	**df**	**Sig value**	**Remark**
Male	12(12.4)	2(1.6)	14	2.091	1	0.148	NS
Female	17(16.7)	2(2.3)	19				

p>0.05

The results on Table 5 indicate that there was no significant difference on teacher's gender and the teaching of mathematics to physically challenged students. This is because the p-value (0.148) is greater than 0.05. Therefore, the hypothesis was not rejected; therefore gender does not have influence on teaching of mathematics to physically challenged students.

Research Hypothesis 2: Teachers' experience do not significantly influence the teaching of mathematics to physically challenged students.

Table 6: Chi Square test for the feedback of respondents on the variable experience

	Agree	Disagree					
Experience	**Observed**	**(Expected)**	**Total**	**χ^2**	**df**	**Sig value**	**Remark**
Less experienced	7(7.8)	2(1.2)	9				
Moderately experienced	10(9.6)	1(1.4)	11	5.078	2	0.079	NS
Experienced	10(9.6)	1(1.4)	11				

p>0.05

Based on teaching experience, the result from Table 6 indicates there was no significant difference on teacher's experience and the teaching of mathematics to physically challenged students. This is because the p-value (0.079) is greater than 0.05. Therefore, the hypothesis was not rejected, meaning that teacher's experience does not have influence on teaching of mathematics to physically challenged students.

Research Hypothesis 3: Teachers' qualification do not significantly influence the teaching of mathematics to physically challenged students.

Table 7 Chi Square test for the feedback of respondents on the variable qualifications

	Agree	Disagree					
Qualifications	**Observed(Expected)**		**Total**	χ^2	**Df**	**Sig value**	**Remark**
Qualified	16(15.7)	2(2.3)	18	3.07	1	0.752	NS
Unqualified	11(11.3)	2(1.7)	13				

p>0.05

Based on qualification, the result from table 7 indicates that there is no significant difference on teacher's qualifications and the teaching of mathematics to physically challenged students. This is because the p-value (0.752) is greater than 0.05. Therefore, the hypothesis was not rejected. This therefore means that teacher's experience does not have influence on teaching of mathematics to physically challenged students

Summary of the findings

1. Majority of the teachers agrees that teacher-students' relationship influence the teaching of mathematics to physically challenged students with 89 out of 99 respondents agreeing to it while 8 respondent disagree.
2. Most teachers (73 out of 99) agreed that School administration influence the teaching of mathematics to physically challenged students as this has the highest percentage which is of representing 73.70% of the total respondents.
3. The result revealed that the influence of school environment on teaching mathematics to physically challenged students is high since most teachers agrees (85 out of 99) with this response while 13.1% representing 13 respondents disagreed.
4. Teacher's approach and methodology is vital in teaching mathematics to physically challenged students since majority of the teachers (86 out of 99) agreed while 12 of the respondents disagreed.
5. There was no significant difference on the influence of teacher's gender, experience and qualification to the teaching of mathematics to physically challenged students, with $\{\chi^2=0.148, p>0.05\}$, $\{\chi^2=0.079, p>0.05\}$, $\{\chi^2=0.752, p>0.05\}$ respectively.

Discussion of Findings

The findings from the study revealed that teacher-students' relationship, teacher's approach and methodology, school Administration and the School Environment influences the teaching of mathematics to physically challenged students, this results is in agreement to Osakwe (2010). The findings also showed that there is no significant difference on teacher's gender influence on the teaching of mathematics to physically challenged students.These findings disagrees with the study carried out by Carrington and Skelton, (2013); Gray and Leith, (2014) which showed thatStudents are known to relate more to female teachers than their male counterpart but, agreed with Holmlund and Sund (2008).

The findings also showed thatteacher's qualification and experience does not influences the teaching of mathematics to physically challenged students. These findings also disagree with the study carried out by Okuruwa (1999) which found that, policy investment on quality of

teachers is related to improvement in students' performance. Specifically, the measurement of teacher's preparation and certification are correlates of students' achievement in mathematics.

Recommendations

Based on the findings on this study, the following recommendations are hereby made;

1. Teachers should be able to communicate very well with the physically challenged students to extricate fear that may show up amongst them.
2. The school administrator and the government should properly encourage the teachers by providing them both monetary and non-monetary benefits to enable them put more effort and increase their efficacy in teaching mathematics to the physically challenged students.
3. Good learning facilities should be made readily available by all the stakeholders involved in all physically challenged secondary schools and accessible for teachers as this will facilitate better and easier teaching of mathematics to the physically challenged students.
4. The school environment should be made conducive by both school administrators and government and free of external distractions to enable the physically challenged focused thereby making the work of the teacher minimal.
5. The teachers should improve their teaching methods and good instructional materials should be used to avoid the teaching and learning process being monotonous and less rewarding.

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