

Influence of Time Allocated For the Implementation of Mathematics Curriculum and Syllabus in Secondary Schools for the Deaf in Kenya

ABSTRACT

Mathematics is one of the three science subjects offered in the 8-4-4 system of Education in Kenya. However, previous studies have indicated low performance in the subject to learners with hearing impairment in the Kenya Certificate of Secondary Education (K.C.S.E) examination in comparison to other subjects. The underlying cause of such performance in Mathematics by deaf learners had not been brought to surface. For this reason, the purpose of the study was to find out the influence of curriculum perspective on academic performance in Mathematics in schools for the deaf in Kenya, in relation to time allocated for the Mathematics curriculum implementation. The study was guided by the constructivist theory which states that knowledge must be created and the social learning theory whereby learning is a cognitive process that takes place in a social context and can occur purely through observation or direct instruction, absence of motor reproduction or direct reinforcement. It employed descriptive research design the study will be carried out in Kisumu County. The sample of the study will comprise four heads of department, 8 teachers of Mathematics and 100 students taking Mathematics. Data was collected using questionnaires, interview schedules and document analysis. The reliability of the data collection instruments was ensured through reviews done by the experts. Quantitative data was analyzed using frequency counts, percentages and mean. It might be helpful to the examiners of schools, curriculum developers, and quality assurance officers of Mathematics in schools for learners with hearing impairment including all those students who wish to take Mathematics as their subject of choice. May also improve the performance of Mathematics in schools for learners with hearing impairment. The results of the study indicated that the time allocated for the implementation of the curriculum used a mean of (2.910). The research concluded that time allocated in syllabus coverage wasn't enough since curriculum is rigid for such learners and some topics are so abstract in the sense that there is a lot of application in solving mathematical problems. The study therefore recommended that for more instructional time during evaluation because by allocating more time to them then they are able to finish their work hence improving their performance.

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I. BACKGROUND TO THE STUDY

The more content within the syllabus students cover, the higher chances of better achievement in Mathematics examinations. In a study done in Nigeria, 10 teachers of Mathematics and 482 students from 10 secondary schools in Delta state were sampled and they responded to two instruments namely, Mathematics Content Coverage Rating Scale (PCCRS) and Mathematics Achievement Test (PAT). It was found out that whenever much content within the Mathematics syllabus was covered, students' achievement in Mathematics was rated high. This meant that if more syllabus content was covered, then students had a better chance of performing better (Abamba, 2012).

The breadth of the syllabus is likely to affect the performance of any subject among students. According to Isaac Buabeng's (2014) study on Mathematics teaching in senior high schools in Ghana, a reasonable percentage of Mathematics content materials are left uncovered before students sit for their final examination. Similar findings were discovered by Ajaja (2009) in Delta State, Nigeria, where greater portions of science content materials are not covered in the public schools. According to Ajaja (2009), incomplete Mathematics syllabus can be attributed to teacher incompetence.

Studies done about learners with hearing impairment have discovered insufficient time, wide syllabus, abstract content within the syllabus as barriers to completion of syllabus in time. For instance, Mukangu (2008) conducted a study on teaching methods, learning resource and utilization strategies by teachers and learners to identify instructional resources and their pedagogical constraints to teaching social studies at Kerugoya school for the deaf. The study targeted a population of 160 respondents and sample size of 88 respondents. From his study, he finds out that the time allocated for syllabus coverage to teachers of the deaf is not sufficient to cover the entire syllabus. His findings agree with those in a research done by (Nyokabi, 2011) in four secondary

schools for the deaf in Kenya on curriculum factors influencing the performance of deaf students in mathematics, which found out that 90% of teachers in these schools never clear the syllabus on time while only 10% made it on time. This was attributed to; some difficult topics as perceived by learners, difficult topics as posted by teachers, the learning speed of the learners which implied that teachers had to dwell long than required to cover some of these topics.

Nyokabi, 2011 also found out Topics that were abstract, involved a lot application, required visualization and used specific language that required comprehension and correct interpretation were reported as difficult. From these findings, (Nyokabi, 2011) recommends a revision and simplification of the language used in textbooks and examinations meant for deaf students. More instructional time for deaf learners is also suggested to improve performance of mathematics among deaf high school learners.

It is clear from previous studies that the more content within the Mathematics curriculum, better is the achievement of learners of Mathematics. Incompletion of the Mathematics syllabus within the curriculum have been attributed to wide syllabus, insufficient time and difficult abstract topics within the curriculum for deaf learners. What is not clear if these are the only factors that affect Mathematics syllabus coverage for deaf learners and if recommendations from previous studies have been considered in Kenya? It is therefore necessary for a study to fill these gaps and to add to the body of knowledge.

PURPOSE OF THE STUDY

The purpose of the study was to evaluate the time allocated for the implementation of Mathematics curriculum and syllabus in secondary schools for the deaf in Kenya.

II. RESEARCH METHODOLOGY

The study adopted descriptive statistics research design. The study was carried out in Kisumu County. The target population was the schools for the deaf in Kenya. However, not all the secondary schools offer Mathematics as a subject to KCSE level. Of the many secondary schools for the deaf, one is a boys' boarding secondary school for deaf, one is a girls' boarding secondary school for the deaf and 19 are mixed secondary schools for the deaf. Reliability of the instruments was established through test-retest method on 10% of study population using Pearson correlation, reliability was accepted at 0.7 and above. Quantitative data was analyzed in percentages and mean whereas qualitative data was transcribed, analyzed and reported in emergent themes and sub-themes.

III. RESULTS AND DISCUSSIONS

The attributes for evaluation of the time allocated for the implementation of Mathematics curriculum and syllabus in secondary schools for the deaf in Kenya consists of a set of four (4) statements to which respondents respond using a five-point Likert scale. The questionnaires related to them exposed to enough mathematical practical sessions, the time allocation for mathematics lessons is sufficient for them to understand the concept being taught, mathematics syllabus is usually cleared on time and lastly their score in mathematics can improve if mathematics exams are set in the Kenya sign language structure.

The questionnaires worded both in the positive and negative sense ranging from 'strongly agree' to 'strongly disagree'. For the positive sense questions, a value of 5 was assigned to 'strongly agree', decreasing values of 4,3,2,1 were given to the other questions, where "strongly disagree was assigned the value 1. For the negative sense questions, the values had assigned in the opposite sense. The questionnaire was analyzed to evaluate the time allocated for the implementation of Mathematics curriculum and syllabus in secondary schools for the deaf in Kenya

Based on the variables were used to get the responds in percentage and mean which was used to determine the time allocated for the implementation of Mathematics curriculum and syllabus in secondary schools for the deaf in Kenya.

Table 1 Evaluate the time allocated for the implementation of Mathematics curriculum and syllabus in secondary schools for the deaf in Kenya.

Students' feeling/ opinions	Responses (%)					Mean	Std. deviation
	SA	A	N	D	SD		
Exposed to enough mathematical practical sessions	2.5	20.0	15.0	42.5	20.0	2.43	1.107
The time allocation for mathematics lessons is sufficient for them to understand the concept being taught	12.5	25.5	20.0	20.0	22.5	2.85	1.396
Mathematics syllabus is usually cleared on time	7.5	7.5	15.0	45.0	25.0	2.28	1.154
Score in mathematics can improve if mathematics exams are set in the Kenya sign language structure	40.0	40.0	10.0	7.5	2.5	4.08	1.023

Grand mean						2.91	
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Key; SA means strongly agree, **A** means agree, **N** mean neutral or not sure, **D** means disagree, and **SD** means strongly disagree.

From table 1 findings indicated that a mean of (4.08) of the respondents score in mathematics can improve if mathematics exams are set in the Kenyan Sign Language structure. The time allocation for mathematics lessons is sufficient for them to understand the concept being taught had a mean of (2.85) of the respondents, further to this a mean of (2.43) said are exposed to enough mathematical practical sessions while a mean of (2.28) said the mathematics syllabus is usually cleared on time and the grand mean for all the variables used in the objective was (2.91) which indicated the evaluation of time indicated towards implementation of the mathematics curriculum and syllabus for the secondary schools for the deaf in Kenya.

Based on the variables were used to get the mean which was used to evaluate the time allocated for the implementation of Mathematics curriculum and syllabus in secondary schools for the deaf in Kenya using the means score of each variable on the table.

Table 2 Level of Variables

Mean score	Time allocated for mathematics
1.00-3.00	Inappropriate
3.00-5.00	Appropriate

This implies the between the mean of 1.00 to 2.50 means that there is inappropriate time allocated for the implementation of Mathematics curriculum and syllabus in secondary schools for the deaf in Kenya, and between the mean of 2.51 to 5.00 implies that there is appropriate time allocated for the implementation of Mathematics curriculum and syllabus in secondary schools for the deaf in Kenya.

In relation to the finding for the variables of the respondent the grand mean was 2.915 which implies that there is appropriate time allocated for the implementation of Mathematics curriculum and syllabus in secondary schools for the deaf in Kenya hence the method is good for learning mathematics. From the findings it was found out that time allocated to Mathematics delivery of contents and even during evaluation was insufficient hence curriculum not fully implement. The above findings we supported by follow researchers and scholars and they found out that;

Studies done about learners with hearing impairment have discovered insufficient time, wide syllabus, and abstract content within the syllabus as barriers to completion of syllabus in time. For instance, Mukangu (2008) conducted a study on teaching methods, learning resource and utilization strategies by teachers and learners to identify instructional resources and their pedagogical constraints to teaching social studies at Kerugoya School for the deaf. The study targeted a population of 160 respondents and sample size of 88 respondents. From his study, he finds out that the time allocated for syllabus coverage to teachers of the deaf is not sufficient to cover the entire syllabus. His findings agree with those in a research done by (Nyokabi, 2011) in four secondary schools for the deaf in Kenya on curriculum factors influencing the performance of deaf students in mathematics, which found out that 90% of teachers in these schools never clear the syllabus on time while only 10% made it on time. This was attributed to; some difficult topics as perceived by learners, difficult topics as posted by teachers, the learning speed of the learners which implied that teachers had to dwell long than required to cover some of these topics.

Nyokabi, 2011 also found out Topics that were abstract, involved a lot application, required visualization and used specific language that required comprehension and correct interpretation were reported as difficult. From these findings, (Nyokabi, 2011) recommends a revision and simplification of the language used in textbooks and examinations meant for deaf students. More instructional time for deaf learners is also suggested to improve performance of mathematics among deaf high school learners.

According to Ajaja (2009) The breadth of the syllabus is likely to affect the performance of any subject among students. According to Isaac Buabeng's (2014) study on Mathematics teaching in senior high schools in Ghana, a reasonable percentage of Mathematics content materials are left uncovered before students sit for their final examination. Similar findings were discovered by Ajaja (2009) in Delta State, Nigeria, where greater portions of science content materials are not covered in the public schools. According to Ajaja (2009), incomplete Mathematics syllabus can be attributed to teacher incompetence.

IV. RECOMMENDATIONS

From table 1 findings indicated that a mean of (4.08) of the respondents score in mathematics can improve if mathematics exams are set in the Kenyan Sign Language structure. The time allocation for mathematics lessons is sufficient for them to understand the concept being taught had a mean of (2.85) of the respondents, further to this a mean of (2.43) said are exposed to enough mathematical practical sessions while a mean of (2.28) said the mathematics syllabus is usually cleared on time and the grand mean for all the variables

used in the objective was (2.91) which indicated the evaluation of time indicated towards implementation of the mathematics curriculum and syllabus for the secondary schools for the deaf in Kenya.

The research recommends for more instructional time during evaluation because by allocating more time to them then they are able to finish their work hence improving their performance.

V. CONCLUSIONS

The research concluded that time allocated in syllabus coverage wasn't enough since curriculum is rigid for such learners and some topics are so abstract in the sense that there is a lot of application in solving mathematical problems.

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