



























AISSK	2	2	3	1	1	1	0	0	0	0	10
GSSK	1	1	0	1	3	2	2	0	0	0	10
HSSK	1	1	1	1	3	1	2	0	0	0	10
HRSSK	3	2	1	1	2	1	0	0	0	0	10
HTSSK	1	1	1	2	2	1	1	1	0	0	10
LCSSK	1	2	2	2	1	2	0	0	0	0	10
LISSK	2	2	1	3	2	0	0	0	0	0	10
MVSSK	1	2	3	1	0	1	1	1	0	0	10
NISSK	2	3	1	1	2	1	0	0	0	0	10
SISSK	2	2	1	2	1	1	1	0	0	0	10
TOTAL	16	18	14	15	17	11	7	2	0	0	100

Source: Survey Data

The table above gives the performance of pupils in a pretest (ie test conducted before learners are taught) in Mathematics in JSS 3. It can be seen that majority of the pupils scored low marks considering all the schools. In fact nearly half of the pupils tested scored below 40 marks. Only 20% of the total scored above 50 marks. This table gives an indication that fast learners in Mathematics are in the minority in all the schools.

TABLE 3: ANALYSIS OF MARKS SCORED IN APOST TEST BY JSS 3 PUPILS IN MATHEMATICS IN TEN SCHOOLS:

SCHOOL	MARK DISTRIBUTION (%)										TOTAL
	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	

AISSK	0	1	1	1	4	2	1	0	0	0	10
GSSK	0	0	1	0	3	4	1	1	0	0	10
HSSK	0	0	1	2	4	1	1	1	0	0	10
HRSSK	0	1	1	3	1	2	2	0	0	0	10
HTSSK	0	0	1	0	1	5	2	1	0	0	10
LCSSK	0	0	1	4	1	2	2	0	0	0	10
LISSK	0	1	1	2	4	1	1	0	0	0	10
MVSSK	0	0	1	3	1	2	2	1	0	0	10
NISSK	0	0	1	4	3	1	1	0	0	0	10
SISSK	0	0	2	1	5	1	1	0	0	0	10
TOTAL	0	3	11	20	27	21	14	4	0	0	100

Source: Survey Data Obtained from Survey

The table above gives the performance of pupils in a post – test (ie test conducted after learners have been taught) in Mathematics in JSS 3. A marked improvement can be seen in the post-test when compared with the pre – test 39% of the pupils scored above 50% as compared to only 20% of the pupils who did so in the pretest. In the post – test all the candidates tested scored above 10 marks which also imply improvement.

TABLE 4: PUPILS OPINION ABOUT THE DIFFICULTY LEVEL OF MATHEMATICS:

Mathematics is a subject that is difficult to understand		
Response	Number of Respondents	Percentage (%)

Disagree	15	15
Agree	60	60
Strongly agree	25	25
Total	100	100%

Source: Survey Data

The table above gives the views of pupils in the different selected schools in Kenema City. From the responses it can be seen that 75% of the respondents points to the difficult nature of Mathematics. This opinion obviously affects pupil’s participation and performance.

TABLE 5: SOME REASONS FOR LOW PUPILS’ PARTICIPATION IN MATHEMATICS LESSONS IN JSS CLASSES:

<b>TEACHERS’ VIEWS</b>
Some pupils are physically challenged .
Some pupils are too shy to speak
Some have little or no confidence in themselves
Some are often late for Mathematics lessons
Little or no interest in Mathematics
<b>PUPILS’ VIEWS</b>
Teachers give them less attention
Lessons are often boring – no activity
Lessons are often abstract

Pupils are sometimes punished for wrong answers
Classrooms are often overcrowded
Little or no provision for group work
Events from home may affect pupils participation

Source: Survey Data

The table above highlights reasons for low or even non participation of pupils in Mathematics lessons .The highlights is from the viewpoints of teachers and pupils. Apart from physical challenges of the learners teachers are of the view that pupils lack interest in Mathematics

The pupils also have many reasons for their non active participation in Mathematics lessons. Their views were expressed through interviews with the researcher. These views are necessary for the attention of Mathematics teachers who need modification for improvement.

**HYPOTHESIS TESTING:**

Male and female participation in Mathematics lessons.

Test: Inference about the Difference between Two Proportions: Let  $P_1$  = Proportion of pupils that agrees to equal male and female participation in Mathematics lessons. And  $P_2$  = proportion of pupils who disagrees that females equally participate as males 32 out of 60 pupils randomly selected from the schools said there is equal male and female participation. 12 out of 60 randomly selected pupils disagree with equal participation. Null hypothesis ( $H_0$ ) Boys participate equally as girls in Mathematics lessons Alternative hypothesis ( $H_1$ ) girls' and boys' participation in Mathematics lessons differ.

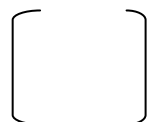
Null hypothesis  $H_0$ :  $(P_1 - P_2) = 0$

Alternative hypothesis  $H_1$ :  $(P_1 - P_2) > 0$

Test Statistic  $Z = \frac{(P_1 - P_2)}{\sqrt{P(1 - P) (\frac{1}{n_1} + \frac{1}{n_2})}}$

Rejection region  $Z > Z_{.01} = 2.33$

$P_1 = \frac{32}{60} = 0.533$        $P_2 = \frac{12}{60} = 0.200$





$$P = \frac{32 + 12}{60 + 60} = \frac{44}{120} = 0.367$$

$$(1 - P) = 1.000 - 0.367 = 0.633$$

$$n_1 = 60 \quad n_2 = 60$$

Substituting into the test statistic we have

$$Z = \frac{0.533 - 0.200}{\sqrt{0.367(0.633) \left[ \frac{1}{60} + \frac{1}{60} \right]}}$$

$$Z = \frac{0.333}{\sqrt{0.232311(0.017 + 0.017)}}$$

$$Z = \frac{0.333}{\sqrt{0.00789774}}$$

$$Z = \frac{0.333}{0.0889255}$$

$$Z = \frac{0.333}{0.089}$$

$$Z = 3.74$$

$$Z = 3.74$$

$$Z = 3.74$$

$$Z = 3.74$$

$$Z = 3.74$$

Conclusion: The calculated value of Z is greater than its tabulated value. We therefore reject the null hypothesis ( $H_0$ ). Obviously the participation of boys is greater than that of girls.

#### ASSESSMENT OF TEACHING AND LEARNING MATERIALS FOR MATHEMATICS:

Let  $P_1$  = proportion of pupils that agrees on the appropriateness of mathematics textbooks

And  $P_2$  = proportion of pupils who disagrees with the appropriateness of learning materials.

10 out of 50 pupils randomly selected in the selected schools agreed that the mathematics teaching textbooks they use are appropriate. 05 out of 50 pupils disagreed that their textbooks are not very appropriate

Null hypothesis ( $H_0$ ) the mathematics textbooks used by the JSS mathematics teachers are appropriate for pupils

Alternative hypothesis ( $H_1$ ): The mathematics textbooks used by teachers are not appropriate for pupils

Null hypothesis  $H_0: (P_1 - P_2) = 0$

Alternative hypothesis ( $H_1$ ):  $(P_1 - P_2) > 0$

$$\text{Test Statistic } Z = \frac{(P_1 - P_2)}{\sqrt{P(1-P) \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

Rejection region  $Z > Z_{\alpha} = Z_{0.01} = 2.33$

Values of the test statistics

$$P_1 = \frac{10}{50} = 0.2 \quad P_2 = \frac{5}{50} = 0.1$$

$$P = \frac{10 + 5}{50 + 50} = \frac{15}{100} = 0.15$$

$$(1 - P) = 1.00 - 0.15 = 0.85$$

$$n_1 = 50 \quad n_2 = 50$$

Substituting

$$Z = \frac{0.2 - 0.1}{\sqrt{(0.15)(0.85) \left( \frac{1}{50} + \frac{1}{50} \right)}}$$

$$Z = \frac{0.1}{\sqrt{(0.15)(0.85) (0.02 + 0.02)}}$$

$$Z = \frac{0.1}{\sqrt{(0.15)(0.85) (0.04)}}$$

$$Z = \frac{0.1}{\sqrt{0.0051}}$$

$$Z = 0.1$$

$$0.714$$

$$Z = 1.40$$

**Conclusion: Do not reject  $H_0$**

The  $Z_{cal}$  (1.401) is less than  $Z_{tab}$  (2.33). We therefore accept the Null hypothesis and conclude that the textbooks and other materials used by teachers are appropriate.

#### **DISCUSSION OF FINDINGS:**

This section gives details of findings from the selected schools. The opinions of teachers, pupils and school administrators are also part of this discussion.

##### **Identifying Slow Learners of Mathematics:**

Teachers with long standing experience in Mathematics were able to identify some characteristics of slow learners of Mathematics . These are highlighted below:

They are usually very slow to understand and learn basic number concepts.

They are less confident in dealing with numbers and can easily get confused in computations.

Slow learners of Mathematics are incapable of showing a high level of initiative and independence in Mathematics lessons.

They usually have low concentration span in class.

Their low confidence level often prevents them from asking or answering questions in mathematics lessons. Slow learners are usually below average in Mathematics exercises

They often evade Mathematics lessons.

They tend to participate less in group work unless they are monitored

Less competitive in mathematical activities.

##### **Some Factors Associated with Below Average Performance in Mathematics:**

The following are some of the factors that contribute to slow learning and below average performance in Mathematics.

##### **Preconception about the difficulty of Mathematics:**

Considering mathematics as a subject hard to understand and consequently develop negative attitude towards it is a common phenomenon among students, parents and he society at large.

Many scholars have stated that there is a coherent relationship between Mathematics achievement and attitudes.

##### **Non Recognition of the Application of Mathematics:**

**It was discovered that while some teachers make effort to relate Mathematics to the surrounding conditions and give practical examples in how pupils can apply what they learn, other teachers often fail to do so. They only teach what is written in the text without practical relationship to daily life.**

**Large Class Sizes:**

**The size of classes in the selected schools were generally large and this factor has negatively affected slow learners Teachers find it difficult to provide feed back to learners and consistently follow their process in Mathematics.**

**Teaching Methods:**

**The methods of teaching pupils also affect their interest and performance in Mathematics. It was discovered that many pupils lacked the fundamental principles of operations on which numbers many slow learners continue to suffer from teaching methods that are not activity – oriented or learner centered but abstract and teacher – centered.**

**Inadequate Teaching and Learning Materials:**

**The teaching and learning of Mathematics requires the use of a variety of materials – books, mathematical sets, geometrical shapes, blackboard rulers, counters etc. In most cases these materials are either not available or insufficient for pupils use. The non-interaction of learners with appropriate teaching and learning materials obviously affect their participation in Mathematics lessons**

**Gender Issues: Most people hold the view that Mathematics is mostly for males and not females. Consequently, many females tend to withdraw and participate less leaving the males to dominate Mathematics lesson**

## SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter gives a summary of the research conducted, the conclusions made and the recommendations needed to identify and help slow learners in mathematics. The research was prompted by the fact that many pupils do not only complain about the difficulty level of mathematics but continue to show less interest and exhibit poor performance in mathematics. To identify those with learning difficulty and to help their learning is the focus of this research. Learning difficulties are not only unique to mathematics but to many other subjects. However, mathematics being a core subject is given prominence in a school curriculum. Hence it has drawn the researches' attention. Slow learners are not failures, they only need the appropriate provision to cope and ultimately progress in education. The research therefore is aimed at helping slow learners to make improvement.

The researcher contacted many pupils, teachers of mathematics, and School administrators to obtain the needed data. In addition the researchers also did some teaching in some of the selected schools to have a real life experience of mathematics teaching. Interview and questionnaires were used for pupils and teachers in the selected school.

The above mentioned methods helped to collect vital information about the learners.

It therefore resulted in the following conclusions.

Slow learners were discovered to have many characteristics as highlighted below:

They find it difficult to comprehend and participate in mathematics lesson.

They are often shy to participate in mathematics lessons.

They fear of missing correct answers and subsequently being rebuked often hinders their participation.

They lag behind others in terms of performance in class work and in examinations

They have little or no confidence dealing with numbers

The researchers also discovered that not only slow learners fail to participate in lessons but average as well as fast learners usually fail to participate in lessons due to various reasons.

Some of these reasons include

Overcrowding in some classes

Non comprehension of lessons

Shyness on the part of learners

Fear of missing the correct answers and subsequent rebuke from the teachers

The researcher also identified reasons for below average performance in mathematics lessons.

One prominent reason is that of fear associated with pre-conceived idea about the difficulty of the subject. Of course this preconception was discovered to be a strong reason why many students and pupils lack interest in mathematics. Hence the participation of pupils in mathematics lessons or adults in mathematical exploit is very low. With all the related facts about low interest and low performance in mathematics it is expedient for teachers to employ many strategies to help pupils especially slow learners to make improvement in learning the subject.

The following are some of the strategies for teaching mathematics to help slow learners.

Using games and puzzles.

Emphasizing practice.

Practically applying mathematics in real life situations.

Encouraging group work among pupils.

Making good use of teaching aids

Giving reward for effort made by learners

Encouraging investigational work

The teachers of mathematics have a lot challenges that interfere and hinder good performance.

These include among others

Large class sizes

Shortage of mathematics in schools and too much work for those available

Lack of interest and enthusiasm on the part of the pupils.

## RECOMMENDATIONS

The following recommendations are hereby made base on the findings of the researcher.

School administration

The authorities of the school should:

Make regular monitoring of the teachers to identify their strength and weaknesses.

Facilitate or initiate the recruitment of mathematics teachers to avoid extreme shortage.

Make provision for their teachers to be part of continuous professional development trainings.

Organize professional development meetings (PDMS) to sort out any difficulties mathematics teachers should have in using the lesson plan manuals

Ensure that teaching and learning material are made available to teachers and pupils.

Allocate trained and experienced mathematics teachers to the junior classes so that pupils will be given strong foundation.

## MATHEMATICS TEACHERS

The mathematics teachers should:

Be familiar with the lesson plan manuals and use them effectively to teach

Make effort to enter college and obtain the reclusive qualifications for teaching mathematics at the various levels.

Be regular and punctual in school and encourage their pupils to do likewise.

Use many activities in teaching to promote participation of pupils in mathematics lessons

Do regular assessment (formative evaluation) tests, assignment and give learners feedback.

Encourage female pupils to develop interest in mathematics.

Endeavour to make their classrooms child friendly rewarding the efforts of pupils

## PUPILS

The pupils in the junior secondary school should:

Endeavour to attend mathematics lessons regularly.

Work in groups to share knowledge and also improve on their problem solving skills

Use the pupils hand book provided for them or similar materials that would increase their level of practice in mathematics

Practice mathematics outside school hours to consolidate their techniques/skills of problem solving.

Demand for feedback from their mathematics teachers when they solve problems.

#### D.PARENTS

Parents should Endeavour to:

Provide the requisite learning materials (eg .books, calculators) for their pupils or children and also pay for their extra lessons.

Encourage their children to be regular and punctual in school.

Follow up the academic progress of their children especially in mathematics in their schools

Create a conducive learning environment for their children at home. Motivate their children to learn mathematics through praise and relevant material rewards.

#### MINISTRIES OF EDUCATION-JUNIOR AND SENIOR SECONDARY

The two branch ministries of Education should:

Solicit government to provide adequate and appropriate teaching and learning materials for schools.

Award scholarships to deserving mathematics teachers and pupils to improve on performance.

Sponsor Continuous Professional Development Programmes for teachers especially those who are new in the classroom.

Motivate mathematics teachers through the provision of reasonable conditions of service.



Monitor the use of Lesson Plan Manuals (LPMS) in schools and make necessary suggestions.

Reward schools and teachers whose pupils do well in mathematics and other core subjects.

#### NON- GOVERNMENTAL ORGANISATIONS

The non- governmental organizations with educational mandates should:

Reinforce in-service trainings for teachers through Continuous Professional Development Programmes.

Motivate teachers of core subject (especially mathematics and English) by providing additional teaching materials and scholarships for further training.

Provide adequate and appropriate teaching and learning materials for teachers and pupils to complement the effort of the government.

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