

Full Length Research Paper

Assisting first year junior high school one pupils to calculate lengths and areas of objects (regular and irregular)

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In this study, attempts are made to identify some of the causes of poor performance of pupils in mathematics in Yorogo junior high school form one A and B in the Yorogo community, a suburb in the Bolgatanga municipal in the upper east region of Ghana. It is believed that the information gathered from the observation and test are the reflection of the situation in other schools in the country. It is also to encourage pupils to benefit the nations, their society and themselves in particular. The findings of this study brings out suggestions and recommendations as to how more pupils could be encouraged to take mathematics at SHS level. These laudable suggestions contained in the study are to correct the appropriate use of teaching and learning materials in the study of mathematics. It is also hoped that the suggestion, if implemented, will improve a meaningful change in the attitude of pupils towards mathematics especially in solving problems of lengths and areas of objects.

Keywords: Mathematics, causes of poor performance, Yorogo Junior high school, Yorogo community, Bolgatanga, Ghana.

INTRODUCTION

BACBGROUND TO THE STUDY

There simply cannot be any meaningful development in virtually an area of life without the knowledge of mathematics. Development in almost areas of life is based on effective knowledge of mathematics. Mathematics is one of the subjects that is very important throughout the world as far as education is concerned.

However, different opinions exist about the meaning of mathematics. Among these are, Alebna (2007) who stated that "mathematics is a number work, algebra, geometry" etc. Even though these are lists of facts that are undisputed, they may be endless if giving them more logical and critical analysis.

According to Asafo Adjei (2005), "mathematics is a subject that deals with the way of finding answers or solution to problems and thinking for ourselves" using the knowledge of probability, statistics, shapes and

measurement in everyday life. For example; measuring the right amount of water for mixing a sachet of Oral Rehydration Salt (ORS).

Mathematics enables us to present information in many different ways such as using figures, letters, tables charts and diagrams. Again, mathematics is a compulsory subject in the school curriculum and as such, must be taught and learnt. Hence, one cannot do without mathematics as far as education and life are concerned.

Mathematics enables helps in our daily activities. For example; it enables us to design and play games which develop our abilities and willingness to perform investigations using various skills and operations such as playing ludo, oware, draught games and so on. It is for this reason that the education system of countries

that are concerned about development put great deal of emphases on the study of mathematics.

Also, mathematics enables us to develop mathematical knowledge both in practical and abstract, thus it assists in logical thinking through practical activities.

Hamming (1980), stated that "mathematics is the language of shapes, size and order and that it is essential part of the equipment of an intelligent citizen to understand this language. Though the above statement about mathematics may seem archaic but nevertheless, it is still valid if giving critical and logical analysis to the definition above.

Cajori (1929) also stated that "anyone who cannot cope with mathematics is not fully human. At best he is a tolerable sub-human who has learnt to wear shoes, bath and not to make anything in the house."

Bergamini in 1969 also said that, the subject in which we never know what we are talking about nor whether what we are saying is true. This means that there is never a finished affair with mathematics. The further we go, the more analytical it becomes therefore bringing in more ideas and opinions.

Mathematics is the body of knowledge counted on concepts such as quantity, structure, space change and the academic discipline. When studied them they evolved through the use of abstraction logical reasoning from counting, calculation, measurement and the study of shapes and motion of physical objects.

Despite the importance of mathematics mentioned in the above paragraphs, the pupils in Yorogo junior high school do perform poorly in mathematics exams. Yorogo junior high school is located in the Yorogo community, a suburb in the Bolgatanga municipal in the upper east region. The community in which the school is located might be a contributing factor to the pupils' poor performance in mathematics and its related courses.

The people in that community are predominantly farmers and petty traders. Due to the occupation of these people, the education of their wards has suffered a serious setback. Parents of these pupils are not always there to send them to school and when they come back from school, there is no parent to monitor the activities of these children and some parents even take their children out of school for a week or more to help them on their farms.

Also, most of the pupils do not come to school on Bolga market days because of helping their parents and traders at the market. As a result of this, the pupils do not get enough to learn seriously. Mathematics need constant practice to develop logical thinking. The negative perception of the people of Yorogo community about education is that; it is time consuming and waste of resources.

The pupils absenteeism had a negative impact on the pupils in their performance in the basic education

certificate examination (BECE) where most of the pupils perform poorly in mathematics and its related courses.

STATEMENT OF PROBLEM

After a lesson was delivered to the students based on lengths and area and exercise given to them, the result showed that they did not understand the concepts of lengths and area especially that of irregular objects. A second delivery of the lesson was repeated and yet the result obtained was still very poor.

Out of fifty (50) pupils in form one 'B' class, only five(5) of them got a pass mark. Four pupils got three out of five marks and one got four out five marks.

This urged the researcher to investigate into the problem. It was very clear that the pupils had difficulties in calculating the lengths and area of objects and this will affect their performance in mathematics and its related courses.

PURPOSE OF THE STUDY

The study is aim at finding out why pupils in Yorogo junior high school one had difficulties in calculating the lengths and area of objects especially irregular ones. Furthermore, the study is to design teaching and learning materials such as the geo-board and rubber bands to help pupils calculate the lengths and area of objects.

Also, the study is to develop the knowledge of pupils in Yorogo junior high school one on the concept of lengths area of objects especially irregular ones.

RESEARCH QUESTIONS

The following questions were put down to serve as a guide for the researcher in carrying out his action and research project appropriately and successful.

1. What are the causes of poor performance in mathematics in Yorogo junior high school?
2. What are the strategies to be used to develop pupils interest in mathematics?
3. How would you use teaching and learning materials to help pupils develop the concept of lengths and area of objects successfully?

SIGNIFICANCE OF THE STUDY

The significance of this action research report is to bring out the appropriate methodology used by mathematics teachers in teaching the subject mathematics especially lengths and area of objects. The use of instructional

materials in lessons delivery is very essential and recommended by mathematics teachers.

It would develop pupils interest to study mathematics hence improve their performances in mathematics and its related courses.

It would also be beneficial to the curriculum research and development division(CRDD) unit of the Ghana education service (GES) to come out with more materials and books that will make the teaching and learning of mathematics more easier.

Furthermore, the research will serve as basis for Ghana Education Service and other non-governmental organization to do further research into the subject.

Also, it is to motivate and develop pupils' interest in learning mathematics to improve on their performance in mathematics and its related courses.

Moreover, this research report will serve as a reference materials for teachers; thus the methodology to be used based on the topic in this research and the designed teaching and learning materials can be used by teachers and pupils to make their lesson more practical and interesting which will invite the participation of pupils fully during lessons delivery and contribute positively.

Finally, researchers who might have faced the same problem can use this research project as a reference material or tool to assist themselves.

DELIMITATIONS

There were a lot of delimitation s anticipated by the researcher. Among which are; frequent absenteeism of pupils especially on Bolga market days and rainy seasons which affected the outcome of the research work.

Time factor and inadequate materials would not permit the study to cover the whole of Yorogo junior high school hence, it was much focused on the form one pupils. On the other side of the coin, pupils had problems on other aspect of the subject but all could not be on lengths and area of objects however, these problems could not be addressed due to lack of funds and time to consider other aspects of the subjects.

Furthermore, the problem was general and cuts across all the classes and schools in the Bolgatanga municipality in the upper east region but the researcher narrowed the study to only Yorogo junior high school one pupils due to lack of enough funds and inadequate materials to extend the research report study to other schools in the municipality.

Finally, the attentiveness of the pupils may also affect the smooth conduct of the study. Pupils may also be affected by their colleagues in doing other things instead of listening attentively to what the researcher or the

teacher will teach them. It was also obvious that pupils become shy to ask or answer questions in class because they fear to be laughed at.

LIMITATIONS

There is no action and research report work of this nature without encountering limitations. Hence, among some of the limitations are the following; due to financial constraints the researcher found it difficult gathering the teaching and learning materials for the research.

The behavior of the pupils towards schooling in the Yorogo community was another factor the researcher faced especially on Bolga market days and rainy seasons because most of the pupils go to market to help their parents and other traders.

Also, during rainy seasons the attendance of pupils to school becomes very poor because of helping their parents at farms. A good number of the pupils do stop schooling to farm for money to support their families financially since most of these children come from poor backgrounds.

Furthermore, most pupils absented themselves from school due to lack of parental care and control. In fact, this is one of basic responsibility of every parent. Parents need to contribute in collaboration with teachers for the betterment upbringing of their wards towards schooling.

Finally, time factor was one of the major limitations during this action research project.

LITERATURE REVIEW

This chapter deals with the review of related literature based on what has been written about a similar problem like this one encountered by other researchers in terms of theories and empirical evidence of the studies.

The researcher based on the research questions as a guide to develop the key issues that would serve as the break down steps to literature review. The work is organized under the following sub-heading; what are the causes of poor performance in mathematics?, what are the strategies to be used to develop pupils interest in mathematics ?,and how would you use teaching and learning materials to teach pupils the concept of lengths and area of objects?

Causes of poor performance in mathematics

Many researchers and psychologists have come out with diverse facts on the causes of poor performance in mathematics over the years whiles others are yet to come with their own evidences of this problem in order

to put more life into the subject and to acquire the interest of students who would like to pursue the course to the higher level.

Among other psychologists and researchers who talked about the causes of poor performance of mathematics are;

Nalie (2002) stated that "every child passes through the concrete manipulative stage where concrete materials are their main source of learning before any other stage in development is reached. Thus teaching and learning mathematics takes place effectively if teaching and learning involves the use of instructional materials to make lessons more children centered.

Hallahan (2005) also added that pupils' poor performance in mathematics may also be as a result of disability such as poor vision. That is visual or spatial may interfere with pupils' ability to solve mathematics problems correctly. Example of visual or spatial problems include miss aligning numerals in columns for understudying the base ten system and problem interpreting mapping and understanding geometry

Brydnt (1990) stated that the attitude of parents towards pupils has a role in pupils poor performance in mathematics more especially girls. Parents normally engage girls in whole lot of activities in such a way that, the girls do not get adequate time to study mathematics.

Also, pupils especially girls negative perception towards mathematics is another factor that accounts for its low performance. Girls think that mathematics is a subject meant for their male counterparts therefore they praise themselves for getting marks such as 50%, 45%, 60% and at times, even low marks.

Castelo (1991), says most difficulties in mathematics teaching hinge on the perception of pupils, teachers and parents on the nature and purpose in which they are engaged. It seems likely that most pupils perceptions about mathematics are formed by their own experience of learning the subject that is they regard the subject as a collection of established knowledge and procedure, purpose, and methodology.

Also, Hayedn (1983) added that the textbooks contain all the necessary subject content but largely omitted the pedagogical innovations that were the key characteristics of the program.

Strategies to be used to develop pupils interest in mathematics

Strategies to be used to develop pupils interest in mathematics based upon the researchers own opinion and with reference to other researchers and psychologists who previously wrote about a similar problem include the following;

Cockrost (1982) said "a more eclectic approach involving an appreciation of practice and variety of

teaching methods in adopted problems should relate to real life issue meaningful to the pupils. It should encourage discussion between teachers and pupils themselves, appropriate practical work, consideration and practice of fundamental skills and routines, problem solving including the application of mathematics to even play situations" though this related literature review may seem old but it is still recommended and essential if given a very critical and logical emphases to it.

Bird(1985) added that the teaching and learning of mathematics should be to show it as a process of creative activity in which pupils can be fully involved and not an imposed body of knowledge immune to any charge or development.

Ranberg and Capenters (1986) have the view that, learning mathematics involves the development of enquiry methods in the fact of real problem. Any step away from this challenge is a step away from mathematical learning.

How to use teaching and learning materials in calculating lengths and area of objects.

Williams (1982) has the view that one of the most formative experience that direct children towards thinking about the measure of a surface is making all patterns. Covering a plane surface with repetition of a particular shape may lead to the question ; how many such shapes were needed to cover the plane surface?

Any paper ruled in grid such as the isometric to be made easily .A lattice of parallelograms allows a comparison to be made between the regions enclosed by pairs of parallel lines by counting the number of units the parallelogram enclosed.

Also according to Williams, some valuable experience of quantities of surface can be found from the shape made by rubber bands stretched round nails on a geo board or nail board.

Martin (1994) came out with the view that, geo board provides a wealth of activities for learning about area of objects. This consist of a square array of nails or pegs around which rubber bands can be stretched to form various polygons. Pupils enjoy working with the geo board because it is a concrete material.

The area of both regular and irregular objects can be determined using the geo board and the rubber bands.

SUMMARY

From the various writers and researchers empirical evidences and their points of view about the causes of poor performance of mathematics, it has been noticed that the learners/pupils perception and experience about the subject prevents them from making progress at the

subject.

In learning mathematics, one needs to broaden his/her scope of mind to things all around him/her in the environment. It is also realize that a restricted minded person finds it difficult to study mathematics and understand it better.

People must therefore be ready to study with open minds and good perception about the subject. The readiness to explore the environment to the fullest should be inculcated into the learners to mathematics.

Moreover, teachers should be ready to use the eclectic approach when handling the subject. This will enable the learners to appreciate the need to learn and study the subject to the maximum.

Teachers should be able to relate the study of mathematics to everyday life situation in order to make it practical and meaningful to the pupils or learners. The learners should be given opportunity to interact with the environment to explore and learn more, he/she is to be shown the process and be made to create activities that will expose him to better understanding and self motivation.

In addition, the use of teaching and learning materials is recommended by teachers and researchers in the teaching and learning process of mathematics because of making lessons practical and child centered to get pupils full participation. Learners especially children learn and contribute well when concrete materials are placed before their senses. Apart from gaining manipulative skills by interacting with materials, it also gives retentive memory as well as motivation to the learners.

Furthermore, diverse strategies should be adopted to sustain the learners interest before, during, and after lessons has been delivered.

Finally, the researcher suggests that the importance and benefits of studying mathematics should be brought to bear for learners to boast their moral and develop more interest to study the course to the highest level.

METHODOLOGY

This is a plan which focuses on how data relating to a particular problem should be collected and analyzed. Here the researcher used the action and research for the study.

The reason for using the action and research for this project is that looking at the nature of a study of this kind, there should be two diverse states in considering the study, thus the study is split into two categories; the strengths and weaknesses of the action research project.

Strengths of the action and research project

The study assists the researcher to comprehend to what

actually goes on in the teaching and learning situation. It also enhances the teacher's professional status and promotes personal development as well as improving teaching and learning.

Also, the action and research study provides one with the opportunity of getting a better understanding of all aspects of his/her own problem in the teaching and learning situation.

It enables the researcher or the teacher to evaluate the effectiveness the methods used.

Weakness of the action research project

There is no action research study of this nature without encountering some weaknesses as such weaknesses such as lack of resources; time, money and materials in the course of gathering information, carrying out the real work and dissemination of findings were seen.

Population and sampling selection

The population used for this research project is the junior high school ones pupils of Yorogo junior high school.

Their population constituted twenty-five (25) girls, twenty (20) boys in the form one 'B' class and thirty-two (32) boys , thirty-three (33) girls in the form one 'A' class making a total of one hundred and ten pupils.

The whole class had to be used because the problem of calculating lengths and areas of objects was a general problem to the class.

Data collection procedure

The data gathered and collected by the researcher based on this action research study contained information about pupils finding it to calculate lengths and area of objects (regular and irregular ones).

The data collection procedure involved observation, interview and test. The above procedures were considered because they would make the results more reliable and valid.

Also due to the large population and nature of sample the researcher dealt with, the procedures mentioned above were the best suggested ones to help arrest the research problem.

Research instruments

The research instruments used by the researcher in the collection of data for the study include; classroom observation, interview, and test.

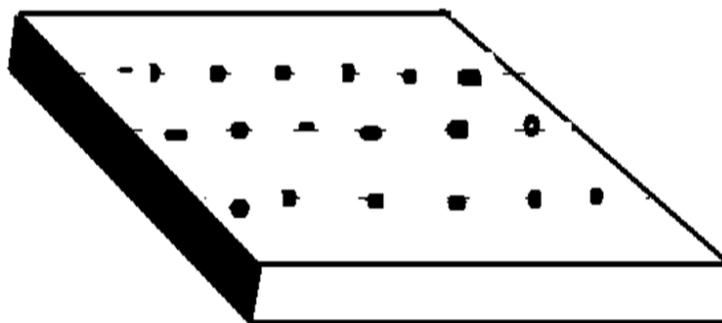


Diagram A

Table 1: Result of pupils pre-test

Marks	Number of pupils	Percentages (%)
0	55	50
1	27	25
2	11	10
3	9	8
4	8	7
5	0	0
Total	110	100

Observation

With this technique, the researcher takes the role of an observer by observing pupils behavior in classroom especially during mathematics lessons. The researcher watches and listens to the responds of pupils. The observation made by the researcher provided him with initial source of information about the situation of the pupils.

Interview

This research instrument can be looked in two ways thus oral and written interview but for the purpose of this study, the researcher used oral question interview to elicit information for the research study. This is a face-to-face interview with the pupils and in a few time more information were collected about the problem under study.

Test

Also, a paper and pen test as one of the research instrument was used to diagnose the extent of the problem and to determined the effectiveness of the interventions that had been designed to address the problem.

Both the pre-test and post-test were designed and administered by the researcher himself, both had the same difficulty level and time period lasted for 30minutes for its reliability validity.

Pre-intervention

The procedures used by the researcher to diagnose the perceived problem before the actual/post-intervention was carried out at this stage (Diagram A).

A pre-test was used to confirm that there was a problem among pupils concerning lengths and areas of objects.

The results of the pre-test are indicated in the table 1.

Intervention

This involves a series of complete approach put in place to solve a specific problem. The result from the pre-test illustrates that the researcher design an appropriate teaching and learning materials or lesson instructional materials to help pupils to understand the concept of lengths and areas of objects properly.

The teaching and learning materials are shown below including the geo-board in diagram A above (diagram B-D).

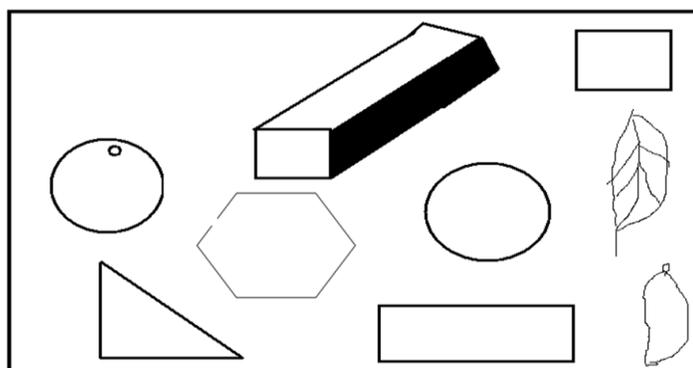


Diagram B

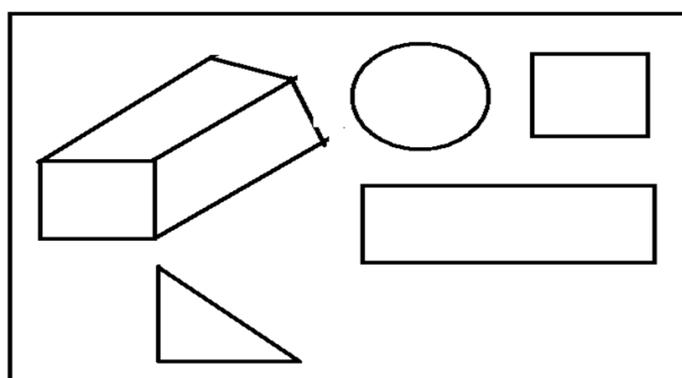


Diagram C: M A set of regular objects

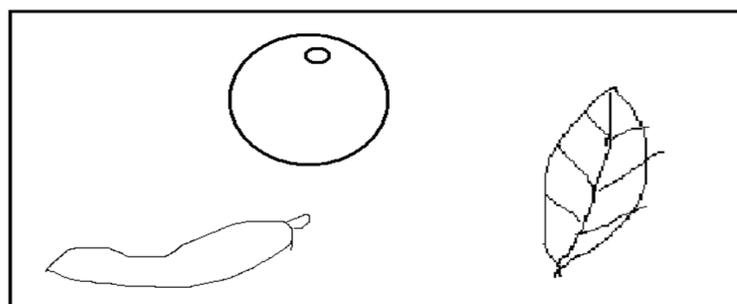


Diagram D: set of irregular objects

The researcher used three (3) weeks in carrying out the preparation for the intervention.

Week one was used to gather valid information about the problem under this research study.

In the second week, the researcher gathered teaching and learning materials from various sources to his lessons real and more practical. Some of the teaching and learning materials were improvised by researcher himself. Nails, wooden board, rubber bands, rule, tape measure among others were the materials used to construct the geo-board.

The researcher used the third week to prepare a detailed lesson planned involving the teaching and learning materials which would make lessons more practical to teach the pupils in an orderly manner presented below;

On the first day, the concepts of lengths and areas of objects was introduced to the pupils. The lesson was introduced by providing pupils with teaching learning materials that have different sizes, shapes, lengths including both regular and irregular objects for them to compare and contrast (Diagram F).

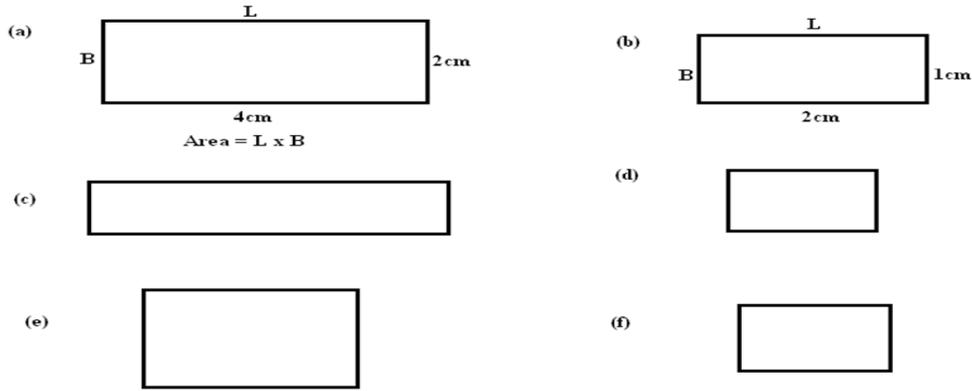


Diagram F: Regular and irregular objects

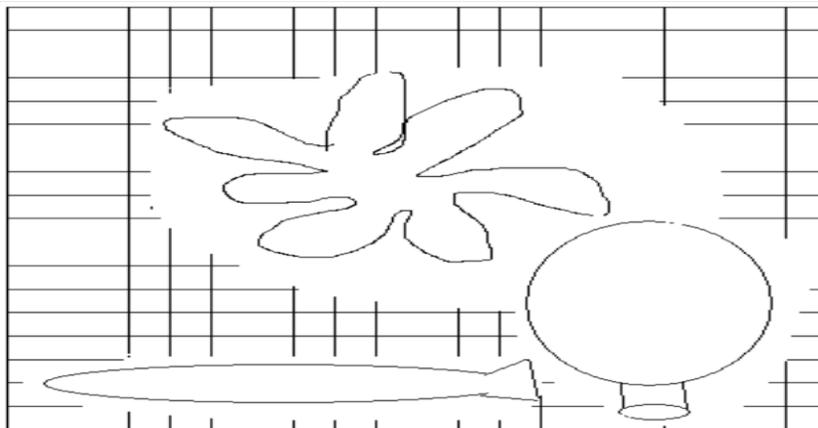


Diagram G: Calculating the areas of irregular objects

Pupils were also made to group the objects and shapes into regular and irregular shapes by sizes, lengths etc.

On the second day, areas of objects with known and unknown dimensions were discussed. Pupils were assisted to calculate the area of objects with known dimension first, after which they asked to measure the dimension of the unknown objects by themselves and calculate in groups and individuals.

On the third day, irregular objects of different kinds were introduced to pupils.

On the fourth day, pupils were made to interact with those materials as well as using them in calculating the areas of irregular objects as shown in diagram G.

From the diagram above, pupils were asked to count the number of square boxes covered by each leaf/object. They were to count as whole units, the pieces that appeared to be equal to or more than half of a whole square and ignore the pieces that were less.

A rubber band was used guide pupils to discover the actual amount of space covered by each object by using it around the nails on the geoboard.

Enough time was allowed for pupils to interact with and work as ma Finally, on the last day, questions were given based on the topic for pupils to solve individually for their assessment.

Post-intervention

After the intervention stage, similar questions of the same difficulty level that is the post-test was administered to pupils.

The result gathered indicated that, there was tremendous improvement.

This was due to the fact that, students took active participation in the lesson and manipulated with the teaching and learning materials which made them understood the concept and was able to answer sample questions very well.

The pupils general behavior and responses during and after the study was a clear indication that, there were changes in their understanding and improvement in their work.

Data analysis plan

The information gathered was edited and results analyzed. The results of the instrument used were tabulated after tallying.

Percentages were marked out and results compared to bring out changes that have occurred (Table 2).

Table 2: Results of pupils post-test

Marks	Number of pupils	Percentages (%)
0	10	9.1
1	10	9.1
2	15	13.6
3	20	18.2
4	30	27.3
5	25	22.7
Total	110	100

Table 3: Distribution of respondents by sex

Sex	Frequency	Percentage (%)
Male	52	47.3
Female	58	52.7
Total	110	100

Table 4: Distribution of pupil's pre-test results

Marks	Number of pupils	Percentages (%)
0	55	50
1	27	25
2	11	10
3	9	8
4	8	7
5	0	0
Total	110	100

RESULTS, FINDINGS AND DISCUSSION

The data collected was analyzed and the results interpreted. However, before looking for answers or solutions to the research questions, it is necessary to provide some background information for the sample selected for the study.

Demographic data

Table 3,4 outlines the pre-test results of the class under study. The whole class, thus one-hundred and ten (110) pupils sat for the test which was scored out of five (5) marks; on calculating the lengths and area of regular and irregular objects. The researcher considered a pass mark of three (3).

From the display of scores and percentages, it is obvious that only seventeen (17) pupils out of the one-hundred and ten pupils got a pass mark representing fifteen (15) percent. The remaining ninety-three (93) pupils representing eight-five percent scored below the pass mark.

Table 5 shows pre-test scores for only boys. The same test items were administered. Fifty-two boys took part. Five marks were awarded for the test. The table above shows that, twenty-eight (53.8%) of the boys scored zero

mark, ten (19.2%) boys scored one (1) mark, four (7.7%) scored 2marks, five (9.6%) scored 3marks also, five (9.6%) scored four marks and no boy scored five (5) marks. The table therefore shows that only ten (19.2%) of the boys scored three(3) marks and above whilst as many as 42 (80.8%) of the boys scored below three (3) marks or the average.

Table 6 shows pre-test results for only girls. The test items were administered to fifty-eight (58) girls. Five marks were awarded for the test.

This table shows that, twenty-seven (27) girls (46.6%) scored zero mark. Seventeen (29.3%) of the girls scored one (1) mark, seven (12.1%) of the girls scored two (2) marks, four (6.9%) of the girls scored three (3) marks, three (5.2%) of the girls scored three (3) marks and no girl scored all five marks.

Also, the table explains that seven (12.1%) of the girls scored three (3) marks and above whiles as many as fifty-one (88%) scored below the average mark.

Table 7 is the display of the post-test results of the sample class.

Form one of Yorogo junior high school is made up of one-hundred and ten (110) pupils. Throughout the three (3) week long intervention period, pupils were taken through a series of practical activities on how to determine and calculate lengths and area of regular and irregular objects.

Table 5: sample statistics on pre-test scores for only boys.

Marks	Number of pupils	Percentages (%)
0	28	53.8
1	10	19.2
2	4	7.7
3	5	9.6
4	5	9.6
5	0	0
Total	52	100

Table 6: sample statistics on pre-test scores for only girls.

Marks	Number of pupils	Percentages (%)
0	27	46.6
1	17	29.3
2	7	12.1
3	4	6.9
4	3	5.2
5	0	0
Total	58	100

Table 6: Distribution of pupils post-test results

Marks	Number of pupils	Percentages (%)
0	10	9.1
1	10	9.1
2	15	13.6
3	20	18.2
4	30	27.3
5	25	22.7
Total	110	100

At the end of the intervention period, a written test similar to that of the pre-test questions in terms of difficulty level was administered. After the administration test items under the same conditions as the pre-test one, the following results were obtained and analyzed from the table above.

Only thirty-five (35) pupils out of the one-hundred and ten (110) pupils in the class scored below the pass mark (3).

Ten pupils scored one (1) mark representing 9.1% of the class, fifteen (15) pupils scored two (2) marks representing 13.6%, twenty (20) pupils scored three (3) marks representing 18.2 %, thirty (30) pupils scored four (4) marks representing 27.3% and twenty-five (25) pupils scored all and that represents 22.7%.

In all only ten (10) pupils failed according to the standards set by the researcher. Steps were still taken by the researcher to assist the ten pupil who failed the test to also attain 100% achievement.

Considering the pre-test and the post-test tables, it is realized that only seventeen (17) pupils passed in the pre-test representing 15%, and ninety-three (93) pupils

failed representing 85%. However in the post-test results, only thirty-five (35) failed representing 31.8% and seventy-five (75) pupils passed representing 68.2%.

A further test of the same difficulty level was administered to assist the remaining thirty-five (35) pupils to also attain 100% achievement.

Table 8 shows the post-test scores for only the boys, the same test items were administered. Fifty-two (52) boys participated and five (5) were awarded for the test . The table shows that only two (2) boys scored zero or one (1) mark representing 3.8%.Eight (8) boys representing 15.4% had 2marks, ten (10) boys scored three (3) marks constituting 19.2%, fifteen (15) boys scored four (4) marks occupying 28.8% and fifteen of the boys representing 28.8% scored five(5) marks all.

From the table, it is observed as many as forty (40) pupils, constituting 75.6% scored three (3) marks and above, only twelve (12) boys scored below the average mark of three (3) representing 23% of the boys.

Table 9 displays the post-test results for only girls who were fifty-eight (58) in number and examined through the

Table 8: shows the post-test scores for boys only

Marks	Number of pupils	Percentages (%)
0	2	3.8
1	2	3.8
2	8	15.4
3	10	19.2
4	15	28.8
5	15	28.8
Total	52	100

Table 9: shows post-test scores for girls only

Marks	Number of pupils	Percentages (%)
0	8	13.8
1	8	13.8
2	7	12.1
3	10	17.2
4	15	25.9
5	10	17.2
Total	58	100

same test items which was marked over five (5). The table shows that, eighth (8) girls scored zero (0) or one (1) mark and seven (7) of the girls had two (2) marks constituting 12.1%, fifteen (15) girls scored four (4) marks representing 25.9% and ten (10) girls scored all the five marks.

From the results been analyzed, it is obvious that twenty-three (23) thus 39.7% of the girls scored below the average mark and as many as thirty-five thus 60.3% scored three (3) marks and above.

FINDINGS

The displayed figures in the pre-test for only boys and only girls and both boys and girls indicate that pupils had difficulties in finding the lengths and areas of objects (regular and irregular objects). The researcher used different means trying to find out what actually causes the poor performance of form one pupils in the topic in Yorogo junior high school.

When the researcher interviewed the head teacher of the school, he said it clear that the teacher who handled the pupils in mathematics before the researcher was not a trained teacher so he lack some of the techniques of motivating the pupils to get interest in the subject.

Also the headmaster made mention of the fact that, the teacher hardly used teaching and learning materials during his lessons delivery.

Few students, when contacted did not hide the fact that they never enjoyed mathematics lesson. Also in request to know from the headmaster and heads subjects departments whether there were teaching and learning materials yet the teacher failed to use them, they said there very few learning materials and even with those available, most of them were damaged.

On the other hand, according to some teachers, parents who did not attach any importance to education did nothing to improve the studies of the pupils rather used these pupils on their farms and markets to help them.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The pupils of Yorogo junior high school were taken through a rescue process to assist them calculate lengths and areas of objects (regular and irregular ones).

Findings indicated that, pupils had no interest in studying mathematics due to the approach used by previous teachers. This was probably due to lack of appropriate TLMs and likewise the methods as well as poor parental care as addressed by the teacher.

At the end of discovery the problem, a post-test was administered and the results compared to the pre-test which was earlier on carried before the intervention.

The results of both pre-test and post-test showed a tremendous improvement in pupils as can be verified from the table of results presented in chapter four (4).

Out of one-hundred and ten (10) pupils who wrote the test, 15% of the pupils had pass mark and above the standard set by the researcher, however in the post-test 75% of the pupils had pass mark and above the standard. The remaining pupils were further assisted to also attain 100% achievement.

The cause of pupils difficulty in calculating lengths and areas of objects exhibited before the rescue activities were more attributed to factors such as appropriate teaching and learning materials which led to abstract delivery of lesson, inappropriate methodology, lack of

parental support in terms motivation as well as poor teacher-pupil relationship among other were realized.

Efforts put by the researcher to address the problem was not 100% successful due to the following factors; parental attitude, absenteeism and lack of time and money to construct more teaching and learning materials which prevented the total success of the research study.

Despite the challenges, the situation was however reversed when the researcher introduced all the means that could promote positive learning outcomes.

Therefore, those included the introduction of appropriate teaching and learning materials, establishing support between and among all pupils and the adoption of pupils friendly pedagogy as a self motivating device to capture pupils' attention for all lessons.

CONCLUSION

Based on the research findings, it is obviously clear that the intervention processes had led to a tremendous success. This can be observe by comparing and analyzing the results of the pre-test and post-test before and after the intervention process.

The success of the research study is due to the carefully selected activities couple with the appropriate use of teaching and learning materials which brought learning before the senses of the pupils. Full participation and interest of the pupils were encouraged and aroused respectively which led to the achievement of the desired behavior and outcomes.

RECOMMENDATION

The researcher still thinks that more could be done to yield better and excellent results even though the research project results showed positive.

The researcher therefore recommended that;

- external motivation tangible and intangible should be given to pupils by both parents and teachers to encourage them to study hard and develop more interest in the subject.
- Ample time should be created to carry out the research activities since a period of three (3) weeks is not enough for detailed lessons.
- Logistics and supply division learning materials to schools to curb the situation of "chalkboard and book" method of teaching.

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