CHAPTER ONE

INTRODUCTION

BACKGROUD TO THE STUDY

Science is the systematic study of anything that can be examined, tested, and verified. Science is derived from Latin word scire which means ‘to know’. Science is therefore associated with problem solving and how the things in the word are being organized.

From its early beginning, science had developed from time to time and is one of the greatest and most influential fields of human endeavor. Today, different branches of science investigate almost everything that can be detected or observed. For a large part of its recorded history, science had a little influence on the everyday life of humans. Scientific knowledge was gathered for its own sake and it had a little practical application in life. However with the dawn of industrial revolution during the 18th century, this rapidly changed.

Today, science has a profound and indispensable effect on the way we lives (our culture and traditions). This effect is largely seen through technology. The scientific knowledge for practical purposes. Besides, today through technology and scientific knowledge, work out in all fields of work has been increased tremendously. Science made work easy to be done through designing and manufacturing of various machines in field. Such as agriculture, medicine, engineering and meteorology.

With this advancement in science and technology, the Ministry of Education and the Ghana Education Service have embraced the study of science in all fields of education.

At the basic school level where the study of science begins, science is unique in the curriculum. This uniqueness is seen in how lesson notes is prepared through the uses of varied and many teaching and learning materials to help pupils to discover simple concept associated with science. In science there are more facts to be learnt by the pupils. The use of various strategies and method of teaching, place the pupil at the center of the learning process. Also the methods and strategies of teaching help pupils to be involved in various activities in order to interact with materials to help them discover things for themselves. These prepare pupils to discover scientific knowledge and acquire process skills. It is indispensable that pupils acquire scientific knowledge and process skills to help them solve problems in their environment.

In science, scientific methods have been the means by which scientists use to solve problems or solicit information about events. It is therefore important to expose pupils to challenging situations that will prompt them to solve their problems. The more often pupils are faced with such challenges the more likely they develop positive attitude towards science and the more they develop relevant research skills with includes planning, designing, experimenting, observation, manipulation, measuring, generalizing and communicating. It is based on these attitudes and processes that pupils will be assessed. At the primary school level, the percentage weightings of the various profile dimensions are knowledge and understanding 20%, application of knowledge 20% and attitudes and process skills 60%. These percentage weightings helps the teacher to place the required emphasis on each of the dimensions in the teaching, learning and assessment processes.

Teachers need various materials such as syllables, teaching and learning aids (original and improvised), pupils' textbooks, and teachers' guide which are termed as curriculum materials for pupils to develop relevant concepts about "Energy".

From observations the investigator had made, it is observed that most science teachers at the basic school level teach without a critical use of the syllables to ensure systematic presentation of science topics. Besides most of the teachers do not use appropriate teaching strategies, methods and varied teaching and learning aids that will place the pupil at the center of the teaching and learning process, thereby making the study of science at the basic level abstract to pupils.

For pupils to develop positive attitudes towards the study of science at the basic school level and also help them to gain relevant process skills, teachers need to develop various strategies, design improvised materials and involve pupils in practical activities that will make pupils interact with materials to be able to develop basic concept in energy at the early stages.

The investigator also observed that, at Pano where this research work is being undertaken, the people are farmers and as a result do not communicate anything about science to their children to motivate them to learn science develop good sense for the study of science.

Moreover, the investigator also observed that personalities like science teachers, doctors, nurses, engineers, laboratory technicians and pharmacist who are role models are not seen in the community to motivate the pupils to have interest in the study of science at the basic school level.

STATEMENT OF THE PROBLEM

In the first week of the investigators observation period at Pano Presby Primary four, the investigator made an observation concerning pupils' attitudes towards science lessons. Pupils were not taking active part of during a lesson in science on the topic Energy. The investigator studied the class teacher's lesson notes and it was well prepared. One thing that the investigator found out was that the teacher's method of teaching was nothing to boast of, it was a lecture method. The investigator also observed that teaching and learning materials were not available during the teaching of the topic energy. For instance 'what energy can do' something to demonstrate that energy can produce light was not found in the class room.

In addition to above, the investigator noted that though the core points of the class teacher's lesson notes were good, there were no activities that pupils would be engaged in to help them understand the various sub – units o f the topic energy.

The investigator therefore planned to design strategies to teach "Energy" to the pupils for better understanding and to develop the relevant process skills and concept about energy.

Generally, the investigator noticed that the pupils do not like science since the teaching and learning processes were always made abstract. Thus pupils are not given challenging situations that would make interact with materials to develop concept about energy in general.

In short the teaching of science is not the best in the school because it is in the form of lecturing.

PURPOSE OF THE STUDY

It is widely known that pupils in general like interacting with materials to discover things for themselves. There is the need therefore to design and plan strategies that could help pupils to develop basic scientific knowledge about energy in the integrated science syllabus.

The purpose of this study is to develop strategies that could help teachers to teach about energy to pupils for them to understand the basic concept in energy at the basic school level. The investigator will also employ practical activities in which pupils will be expose to situations in which they will interact with teaching and learning materials (both improvised and original).

The practical activities will not only assist concept development but also place pupils at the center of the teaching and learning process. This will help pupils develop positive attitudes towards the study of science.

RESEACH QUESTIONS

The investigator asked himself the questions below which assisted him to undertake the research successfully.

- What strategies could be used to teach energy to Pano Presby Primary four pupils?
- Will practical activities help pupils to develop the relevant knowledge and facts about energy?

- What improvised materials should be used to teach energy?

SIGNIFICANCE OF THE STUDY

It is therefore hoped that this research work will assist science teachers at the basic school level to design appropriate strategies to teach energy and other challenging topics in the integrated science syllabus.

It will also increase the knowledge of teachers to use design appropriate improvised materials that will be used to aid pupils understanding of lessons on energy.

It is also hoped that by the end of this research work, the pupil will be able to

i. Develop relevant process skills in the study of energy.

ii. Develop basic concept in heat and sound energy.

Finally it is hope that by the end of this study,

i. Teachers will be able to design varied improvised materials.

ii. Teachers will adopt the use of practical strategies which will engage pupils in activities.

LIMITATIONS

The study was limited by the way the data was collected and analyzed. Some of the pupils may not be present at school throughout the period of the intervention and this may affect the result of the study.

The study was also limited to the research questions raised and measurements were made through the research instrument.

The investigator limited himself to observation as a research instrument since the class teacher was not co – operating with the interviews and questionnaire.

DELIMITATION

The research work was limited to the primary pupils of Pano Presby Primary school. The school is under resourced in terms of teaching and learning materials.

The project was limited to the teaching of energy in the class.

ORGANIZATION OF THE STUDY

CHARPTER ONE

INTRODUCTION

- Background to the study.
- Statement of the problem.
- Purpose of the study.
- Research questions.
- Significance of the study.
- Limitation.
- Delimitation.

CHARPTER TWO

LITERATURE REVIEW

- Theoretical framework of the study.
- Empirical data (related to important aspect of the study)
- Summary of literature review.

CHARPTER THREE

METHODOLOGY

- Population, sample and method of collection.
- Scoring instruments, questionnaire, observation, interview, lesson and post presentation.
- Method of analysis.

CHARPTER FOUR

DATA PRESENTATION ANALYSIS

- Analysis of data based on the research questions.
- Findings and discussions.

CHARPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

- Summary of main findings of the study.
- Conclusion.
- Recommendation.
- Suggestion for further study.

CHAPTER TWO

LITERATURE REVIEW

INTRODUCTION

This chapter endeavors to review the work of other peoples work relating to this study. Consequently, the chapter will discuss the following areas;

- The definition of energy.
- What energy can do?
- Sound and heat energy.
- The importance of activity – oriented method of teaching.
- The need for activity – oriented method of teaching at the primary school.
- The need for the use of improvised materials in teaching.

It is obvious that everybody needs some strength to get a work done. When we are hungry, we feel weak. Sometimes one finds it difficult to walk, play or lift things about

easily. Humans therefore need something which will help them in walking, playing or lifting things and performing their everyday activities easily.

When we eat we become active and can do activities so easily without facing problem. In lay mans view we think that it is food that gives energy and that food is energy. In scientific language food provides 'something' which enables us to perform our daily activities. That 'something' is what we called energy.

According to Rev. E. Boateng – Ennimful et al (2005) "Energy is the ability to do work". Anything which is capable of doing a work possesses energy. In wise, the energy that an individual possess determines the kind of work that the individual can do. Energy can do a lot of things in the life of an individual.

From Microsoft Encarta Encyclopedia Standard (2006), "Energy is the capacity of matter to perform work as a result of its motion or its position in relation to the forces acting on it". From the first definition of energy, energy is the ability to do work, the second definition explains that, the ability to do that work is the capacity of matter in that particular body that enables it to perform work.

In short terms many scientists of yesterday and today, have expressed their views on why energy indispensable in the life of an individual and in the world as a whole. All scientists who have expressed their view on energy revolve it around one particular idea, which is its ability to perform work.

Over the years different forms of energy has been discovered and each playing a particular role. In short energy can do a lot of things in human life.

According to J.L Lewis and G.E Forcroft (1991), “Everything you do needs some energy.” Nothing can be done without the capacity of matter in a body or substance is zero.

Thornes (1994) is also of the view that without energy nothing can be done or ever happen. A vehicle without energy or fuel cannot move even an inch, on less it is being pushed and before you can push a car, energy is needed.

According to Rev. Boateng-Ennimful et al (2005), “Lack of energy leads to inactivity and death.” Before one can be active in all that he does, the person should be strong enough. The strength comes from energy in the individual. If some one does not eat for a long time, the person might die. Machine can not work if fuels are absent in it.

Without energy, life becomes meaningless and causes the rate of production to be low. With the explanation given to energy from above, it can be deduced that energy can do a lot of things. Below are some of the things energy can do. When a kerosene is poured into a lantern and your light it, it gives off light and the light is caused be the energy that exist in the kerosene. In the same way when you air into an empty bottle, sound comes out. We need that energy that gives out sound. Besides energy produce electricity and magnetism, move objects, warm up substance and causes many reactions to occur.

The focus of this study is mainly on sound and heat energy. Many scientists have contributed their part on these two forms of energy.

According to Nolan (1995), “Heat is the amount of internal energy flowing from a body at a higher temperature. He continues by saying that a body does not contain heat but rather contains internal energy.” It is this internal energy in a body which comes out as heat

energy. When the body cools it internal energy decreases like wise when it warms, its internal energy increases.

This energy causes so man changes in a body. For instance heat can cause a body to warm up, to expand or to burn.

Heat can be produced by rubbing the palms vigorously putting charcoal into a cool pot and starting a fire with a matches and rubbing a stone on the surface of a metal. When a piece of copper wire is connected to the positive and negative terminals of a dry cell, heat is produced. All these activities produce heat a result of the reactions that occur. In a nut shell heat is produced by burning, friction and the sun.

Even though the sun is far away from the earth it can be observed that when a container of water is placed in the sunlight, the water becomes warm. Again when a candle wax is placed on a copper metal about four points and copper metal is sent close from the fire. It can therefore be said that heat energy is transferable. Thus it can be transferred from one point to another.

Heat energy is transferred from one point to another by three main ways. These ways are conduction (through a material medium), convection and radiation which occur as a result of electromagnetic waves. Heat is used for various purposes in the home, work place and in transportation.

Sound is another form of energy which this study sees to review. Sound energy enables or causes mammals to hear and help them to run away from danger.

According to Abbey T.K and Essiah J.W (1990), integrated science for senior secondary school, sound is produced through vibration, when particles of matter. For

example when the top of milk tin or a drum is hit with a stick, the particles vibrate to produce sound. How high or low the sound is depends the strength with which the matter is caused to vibrate. Sound can also be produce by blowing air into an empty bottle, striking a turning fork and blowing air into a bamboo stem. The topic under review requires practical skills and it is indispensable to life and need to be taught in such a way that pupils will fully understand it.

In this wise, the best method of teaching this research topic is by doing. With this the integrated science syllabus for basic school encourages teachers to make their teaching more practical with activities which will provide pupils with variety of work. The syllabus also places much emphasis on the use of materials in aiding pupils understanding.

Science teaching should be done in such a way that, pupils should be the main focus of the teaching and learning process, whiles teachers limits themselves to be facilitators. Thus pupils should be given the opportunity explore and discover facts for themselves with little or no interference from teachers.

From a philosophical rather than a psychological point of view, John Dewey with his progressive education took the position that only activity is indispensable in teaching pupils. For him, the job of the teacher was to see to it that every learner is busy.

Mary and John (1982) are of the view that the opportunity for help children develop cognitively and intellectually are particularly abundant when they are using manipulative materials. Children will benefit if their teachers have a broad and varied repertoire for furthering development.

On their part Howard and Audrey (1975) said the days when a teacher had only his voice, a blackboard and a large set of books to aid him in his work have long since passed. In recent times he is faced with what can seen as bewildering range of aids of many kinds. These aids offer the teacher the opportunity to make his work more easily and effective to release him from task. In short activities release teachers from talking too much during instructional time.

J.S. Ferrant (1980) says "Efficient learning depends on a well chosen and a well manage activities." Learning objectives is best achieved when the teacher is able to choose appropriate activities and his ability to be a good facilitator of the activities chosen.

Piaget (1980) said concept formation is a fundamental process of both instructional, material and the right activities which carefully give details about the concepts in the psychological process in the child. This is known as accommodation.

The activity oriented method or approach takes advantages of pupils' previous knowledge, experience, familiarity with the environment and the play materials. Developmental stages (concrete operational stage 7-11)

The teaching and learning process which involves pupils in varied activities aid teachers to provide variety and flexibility in their teaching and also prevent boredom.

It is crucial and a pre-requisite for the classroom teacher to use the activity-oriented method to teach at the basic school level, especially in science to enhance pupils understanding and participation. The activity method also create awareness to the pupils on the issue that he/she is important in the teaching and leaning process since he/she is placed at the center of the instructional process. Though most teachers are of the view that the activity oriented

of teaching waste a lot of time, others do not see its needs. Activity method is one of the best, if not the best, in the teaching and learning at the primary school level, cannot be over emphasized.

As declared by Failey (1967) that activity method helps the child to be active in classroom. These are many undisputed fact to back the fact that activity method of teaching is difficult, if not impossible to be relegated to the background at the primary school level.

Ausubel (1973) is the view that young children are capable of understand abstract ideas if they are provided with efficient empirical experience with the phenomena that, they are only to understand. In short children can only learn abstract ideas through the provision of concrete materials which they can manipulate. Besides “Teaching that uses active pupil participation is a cooperative effort not a man act” Ferrant (1980)

In a teaching and learning process where pupils are much involved, the work load does not fall on the teacher a lone but the pupils as well. This liberates the teacher from length, verbal explanation and writing on the chalkboard. Since pupils will find ideas for themselves.

S.K Koehhar (1985) says on activity is anything which is carried out with the purpose in a social environment involving physical and mental action. Such activity helps in the establishment of stimulating environment for creative expression. He furthered it by saying that the modern school is an activity base which emphasis the creative aspect of experience. It is these days recognized that directed activities give reality to leaning and effective teaching. Activities are meant to provide varied experience to the pupils to facilitate the acquisition of knowledge, experience, skill and attitudes.

On his part Chris Kyiacou (1986) said “Children learn through the practical activity of doing and through applying to their own experiences, knowledge and skills. Children can only learn through what they do, play about and relating it to all experiences, knowledge and skills they have acquired previously.

In addition to the above, Lawton (1981) says a child born into the world, nothing but learns through activity. For him children learn better ad faster when they are taught through their own activity. He explains that, activity oriented method takes different form and generates several benefits among pupils.

Stella Duke (1967) is of the opinion that, “Students, more especially young ones, find it difficult by nature to stay still without indulging in an activity.” The planning of any teaching and learning process in the primary school, one must be guided by his natural propensity, so that the children become active participant. This principle provides opportunity and numerous situations.

Robert (1968) is also of the view that most educational psychologist agree that actives involvement of learners will facilitate learning and has the following advantages.

- It helps to focus the child’s attention on the task ahead
- It alert the child to his importance in teaching and learning process
- It provides more dramatic source of feedback.
- It fosters greater efficient in learning
- Mixed ability grouping gives opportunity for leadership roles and helps in socializing.
- The knowledge through activity method is easily assimilated as it is a result of personal resolute activity.

- It offers the pupils an insight into the fact that real knowledge is the product of enquiry.

Activity method brings to bare that child's interest is doing than listening and that brings total understanding.

Finally, Piaget (1980) said, naturally, children have a distinctive ways of behaving in an attempt to take interest in their environment. Such behaviour includes playing collecting objects, showing curiosity about objects and events, showing creativity, imitating actions and assuming leadership roles (cited in Teaching Science in basic school).Children have different ways of solving problems they encounter on their own in the environment. Some through playing, showing curiosity about objects and events, showing creativity and assuming leadership roles.

The investigator of this research work of the view since children learn through what they do, and then the topic energy should be taught through the use of activity method where they will be able made to interact with improvised materials. This will go along way to enhance the formation of concepts and facts on their own with no interference. It is through that pupils learn through what they do, play with or interact with. The activity oriented method of teaching can only be successful if materials are made available enough for pupils to interact with.

Materials comes in different forms, there are already made materials while some are improvised. This study will focus much of its attention on improvised materials.

According to Nartey and Menyah (2003) improvisation is the preparation and use of low cost, readily available materials in the locality suitable enough to make teaching and learning meaningful to the pupils. These materials are found around us, in the houses and

almost everywhere in the environment. These materials could be prepared by either substitution or by construction depending on the type of material needed. The improvise materials are normally used when the original materials are not available or are expensive or delicate or sophisticated to use. Many ready-made materials may not satisfy the needs of pupils in you class as much it becomes necessary to improvise such materials in order to help your pupils to learn.

With improvised materials pupils get to know that they can learn and understand using the materials in their own curious without depending expensive materials.

According to Nartey and Menyah (2003), “there are many importance of improvisation.

- Improvisation is less expensive than manufacture materials.
- It creates interest in science teaching and learning.
- Enables learners to develop an appreciation of the use of everyday things in learning science.
- Improvisation helps pupils to develop self reliance in the teacher.
- It makes the teacher resourceful enough.
- It enables many of the learners to engage in practical activity at the same time since these materials are not bought but got from our local environment.
- It is less prone to breakages and repairs.
- It encourages cooperation among pupils.

From the above importance of improvisation, it’s advisable that teachers adapt to the use of improvised materials to teach pupils since it makes use of things in the environment.

It is this investigators view that science teachers at the basic schools level will adapt to the use of improvised materials to aid pupils understanding especially on challenging topics since pupils are already familiar with things in the environment.

SAMMARY OF LITRATURE REVIEW

In a nutshell clarifications have being made that, Energy is a topic that needs to be taught with activity oriented method where activities will be giving to pupils to perform. Also the materials to be used should be improvised materials that are built with local materials.

According to J. S. Ferant (1980) “efficient learning depends on a well chosen and a well manage activities.

Ausubel (1973) is of the view that “young children are capable of understanding abstract ideas if they are provided with efficient empirical experiences with the phenomena that they are to understand.

Chris kyiacou (1986) said “children discover and develop their creative abilities by doing, making and organizing. It’s true that practice makes a man perfect. The more pupils are engaged in activities working and practising on their own, the more they learn and become perfect which also leads to them understanding what they do.

CHAPTER 3

METHODOLOGY

This chapter focuses on the methods and techniques employed in the study, the population and the sampling plan, research instruments, lessons, interventions and appendix.

RESEARCH DESIGN

The study under review is an action research. It is concerned with diagnosing a problem in the teaching and learning process and attempting to solve it through the use of scientific methods. This deals with a local problem and it is conducted in the local setting. This type of research was chosen due o its ability to provide immediate solution to a local problem, precisely a classroom problem through the use of scientific method.

The strength of this research work is its ability to solve immediate problem. It also contributes to science or general knowledge if successfully done or conducted. Meanwhile upon its capacity to diagnose and solve a classroom problem immediately, it is only limited to the classroom or the local setting. Besides, the result of this research work or study can only be applied in a classroom or the field where the study was conducted. In furtherance its method of data collection is too laborious and tedious and time consuming. Finally, it is also costly.

This research work is using the same group in pre-test and post-test / intervention design for the topic “Strategies to teach energy to Pano Presby Primary four pupils.” With this design, a pre-test is administered by the investigator based on the topic, after which an intervention will be put in place by the investigator by way of re-teaching the same topic using activity-oriented method, improvised materials and also engage pupils in activities. This, the investigator thinks it will help pupils to discover facts associated with energy.

The effect of the intervention process ill be the distinction between the pre-test/pre-intervention and the post-test/post-intervention.

POPULATION AND SAMPLE

The population for the study was Pano Presby Basic four pupils. This was made up of fourteen pupils who constitute the population size. Out of the total population 8 pupils were boys whiles 6 were girls. The average age of pupils was 11 years.

The sample size out of the population size was 5 pupils, 3 boys and 2 girls. The sampling plan employed in this study was simple random sampling. In this sampling method, all units of the target population were given equal chance of being chosen or selected.

The investigator decided to use only five pupils as the sample size due to the fact that some pupils were not always punctual to school during the interventions.

RESEARCH INSTRUMENTS

The investigator's aim of embarking on this study was to have a reliable and effective findings which will serve as evidence to the suggestions and recommendation that will be made for further study. With this aim, the investigator thought it useful to use observation, the questionnaire, pre-test and post-test as his research instruments.

The investigator used observation on both the teacher and pupils, pre-test and post-test on the pupils and the questionnaire on the teachers. The investigator used observation technique since, there were information which when asked or interviewed would not get from both the teacher and the pupils. Questionnaire was used by the

investigator on the account that the teacher can read, understand and provide the relevant information that will be demanded by the questionnaire.

Finally, the pre-test and the post-test were used on pupils to find out their previous knowledge and the current knowledge that would be obtained after the intervention process respectively.

Observation

Observation as a research instrument is a method of data collection that uses vision as its main means of collecting data. It aims at collecting data on the methods and techniques employed by the teacher and the pupils' responses and behaviour during the instructional process. This instrument was used on three conservative times, which is before, during and after the intervention process after he encountered the problem.

Questionnaire

Questionnaire consists of a list of question or statements about the aim of the study and the research questions to be verified and answered, to which respondent is required by writing. A questionnaire consisting of nine (9) items was given to the class teacher by the investigator o answer all the items. The items are shown in appendix I

Pre-test

A pre-test consists of questions with answers which aims at reviewing pupils' previous knowledge they have had already abut the topic understudy.

A pre-test consisting five items with answers was given to the sampled size to work on and it represented in appendix II

Post-test

A post-test consisting the same questions as in pre-test or a parallel test to the pre-test which aims at ascertaining whether there has been a change or not in the behaviour and knowledge of pupils on the topic taught. It also measures the effectiveness of the strategies and the activities employed by the investigator. The post-test is on each of the three lessons is also represented in appendix III

LESSON

The investigator took pupils through three different lessons on the various units of the topic “Energy”. In all the three lessons, the investigator prepared a detailed lesson notes and made use activity oriented method in which pupils were taken through various activities, interacting with improvised materials prepared by the investigator.

INTERVENTION

PRE-INTERVENTION

To intervene means, to be involved, intentionally, in a difficult situation in order to improve it or prevent it from getting worse.

Before one can intervene he / she must enquire to know the root and the extent of the problem.

With this in mind, the investigator undertook a pre-test with the view of knowing their previous knowledge on energy. The pre-test was an investigator-made test consisting five (5) items which was given to pupils to answer all. The highest mark of the test was 5 marks equivalent to 100%.

INTERVENTION

The investigator realized that his time was limited and that if care is not taken; he could not complete the research in the time frame given to him, as result restricted himself to the challenging units that needed much attention on energy. The topics were

- What energy can do
- Heat energy
- Sound energy

In implementing a new strategy to re-teach the topic energy, the investigator prepared a detailed lesson notes with activities that pupils will be taken through interacting with teaching aids (improvised materials).

The investigator made good use of the activity-oriented method in all the three lessons, 60minutes each. The lessons notes on the three lessons are shown in appendix IV. Pictures of activities with pupils during the instructional period is also represented in appendix V

POST-INTERVENTION

The investigator realised a total change in the pupils after the three lessons he taught. Pupils participated fully and enjoyed the lesson since they were interacting with materials from their local community.

Three post-tests were administered three days after the necessary and adequate intervention. (activity-oriented teaching) has been done on each of the three lessons. The significance of this post-test was to determine whether the intervention strategies used had any effect or not on the pupils.

The questions which were used during the pre-test were change during the post-test but it was parallel to the pre-test. The items were five (5) for each lesson taught. Procedures, rules, regulation used in the pre-test were applied during the post-tests. After the post-tests the marks obtained by pupils were computed with the result of the pre-test and it was observed that pupils had acquired more knowledge on the topic energy as compared to the previous knowledge they had.

In each of the three tests the highest mark was 5 equivalents to 100%.

CHAPTER FOUR

RESULTS, FINDINGS AND DISCUSSIONS.

This chapter focuses on analysis of data based on research question, findings and discussion.

PRESENTION OF RESULTS

In the course of the research work, the investigator first determined the pupils performance by conducting a test (pre – test) for the sampled size. This was to find out the pupils level of understanding on the topic under study. The performance of scores of the pupils in the baseline test (pre – test) have been represented in table1below.

APENDIX I

QUESTION FOR TEACHERS

1. Has the topic Energy been taught in this class before?

A. Yes B. No

2. Circle the dimension that the objectives for the lesson on Energy covered.

A. Process skills B. Knowledge C. Understanding D. Application

3. How did you find the pupils' interaction with teaching aids?

A. Effec5tive B. Partial interaction C. No interaction

4a. Did the teacher encouraged group discussion?

A. Yes B. No

b. how did you find the group discussion?

A. Encouraging B. Not encouraging C. No discussion

5 Did the operation of the teaching – learning materials help the teacher and pupils to work within the period?

A. Yes B. No

6 How did the teacher assist the pupils?

A Motivating the individual B. Helping the weak to active part

7. Did the materials helped pupils to question out things and to find out facts and concepts for themselves.

A. Yes B. No

8a. Were the pupils motivated and their interest sustained throughout the lesson?

A. Yes B. No

b. How did the teacher motivated the pupils?

A. Praising B. Clapping C. Encouraging

9. How did you find the expression work on the lesson?

A. Very easy B. Difficult C. Within the level of pupils

APENDIX II

PRE – TEST

1 Energy can give …….

A. Sound B. Sleep C. Food

2 Energy is the ability to …….

A Play B. Dance C. Work

3 Lack of energy leads to ……..

A. Inactivity B. Activeness C. Attention

4 The process by which heat is transferred from one place to another through a material medium is called……

A. Radiation B. Conduction C. Convection

5. Sound can be produced when you……..

A. Beat the top of a drum B. Pour water on a metal C. Push a wall

APPENDIX III

POST – TESTS

QUESTIONS ON WHAT ENERGY CAN DO

1. Energy can help us to do work.

True/ False

2. Lack of energy leads to in …….

A. Inactivity B. Activeness C. Attention

3. A lantern without kerosene can light up……

True / False

4. When the school base drum is played sound is produce

True/ False

5 State two things that energy can do

a)…….. and (b)…….

QUESTIONS ON HEAT ENERGY

1. Heat is produced by friction.

True/ False

2. The process by which heat is transferred through an empty space is called.

A. Conduction B. Radiation C. Convection

3. Heat can be transferred through metallic object easily than plastic and wooden objects.

True/ False

4. The process by which heat is transferred through a material medium is called.

A. Conduction B. Radiation C. Convection

5. Mention two things each that heat can be used in the home and at work places.

QUESTIONS ON SOUND ENERGY

1. Sound is produced when particles of vibrate

True/ False

2. All following the can produce sound when their particles are caused to vibrate except…

A. Drum B. Bamboo stems C. Air

3. Which of the following materials in environment can be used to produce musical instrument?

A. Pawpaw stalk B. Plantain stem C. Coconut leaves

4. Mention two instruments that can be produced using local materials.

a)……. and b)……..