

REPUBLIC OF GHANA
MINISTRY OF EDUCATION, SCIENCE AND SPORTS



Republic of Ghana

TEACHING SYLLABUS FOR INTEGRATED SCIENCE
(PRIMARY 4 - 6)

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TEACHING SYLLABUS FOR UPPER PRIMARY INTEGRATED SCIENCE

RATIONALE FOR TEACHING NATURAL SCIENCE

Science and technology form the basis for inventions, for manufacturing and for simple logical thinking and action. This means that scientific and technological literacy is necessary for all individuals, especially in developing countries which have to move faster in the attempt to raise the standard of living of their people. Natural science is a fusion of the major branches of science. Its study at the basic education level will equip the young person with the necessary process skills and attitudes that will provide a strong foundation for further study in science at the upper primary level and beyond. It will also provide the young person with the interest and inclination toward the pursuit of scientific work.

GENERAL AIMS

The syllabus is designed to help the pupil to:

- i. develop the spirit of curiosity, creativity and critical thinking.
- ii. develop skills, habits of mind and attitudes necessary for scientific inquiry.
- iii. develop the spirit of curiosity for investigating and understanding their environment
- iv. communicate scientific ideas effectively
- v. use scientific concepts for explaining their own lives and the world around them.
- vi. live a healthy quality life.
- vii. treat all resources of the world with humane and responsible attitude.
- viii. show concern and understanding of the interdependence of all living things and the Earth on which they live
- ix. design activities for exploring and applying scientific ideas and concepts

SCOPE OF CONTENT

The topics in the syllabus have been carefully selected to introduce the pupil to the enquiry processes of science as well as to basic ideas in science. The topics cover the basic science disciplines, agriculture, health, industry and Basic electronics.

PRE-REQUISITE SKILLS

For successful study of Natural Science at this level, the pupil should have good observational skills and communication skills. Children who have gone through studies in Environmental Studies at Kindergarten will benefit greatly from this subject.

ORGANISATION OF THE SYLLABUS

The syllabus has been structured to cover each of the three years of Primary 1-3. Each year's work has been grouped under five sections or themes (Diversity of matter, Cycles, Systems, Energy and Interactions of matter). Each of these themes is related to everyday experiences of the child, and to commonly observed phenomena in the child's environment. The main aim is to enable pupils appreciate the links between different scientific topics and thus help them to integrate scientific ideas in dealing with phenomena. The sections/themes cover a core of concepts which provide broad based understanding of the environment upon which the foundation for further study could be built.

The topics under each theme are not to be looked at as separate or isolated blocks of knowledge. In general, there are no clear borders between these themes. There are some topics that are common to different themes. A conscious effort should therefore be made by the teacher to let pupils see the link between themes whenever possible. In particular, it will be noted that Systems, Energy and Interactions of matter are closely related.

Another feature of the syllabus is the *Spiral Approach*. This is characterised by revisiting concepts and skills at different levels with increasing degrees of depth at each stage. The spiral approach has the benefit of matching scientific concepts and skills to pupils' cognitive development. It therefore helps pupils to build a gradual mastery of scientific skills.

The titles of the sections are the same for each class level. However, the knowledge, understanding as well as the activities and range of process skills presented have been extended at the different class levels. The focus of each theme is provided below.

Diversity of matter

Pupils should recognize that there is a great variety of living and non-living things in the world. Humans seek to organise this great variety to better understand the world in which they live. There are common threads that connect all living things. There are also unifying factors in the diversity of non-living things that scientists use to classify them. The study of the diversity in the world should also help pupils to appreciate the importance of life's diversity and therefore take necessary steps for maintaining this diversity. Topics covered under Diversity of matter include the following:

- Variety and characteristics of living things
- Materials
- Classification of organisms and materials

Cycles

Pupils should recognise that there are repeated patterns of change in nature and should seek to understand how these patterns occur. Examples of cycles are the day and night cycle, life cycles of living things and the recycling of resources. Studying these cycles helps humans to understand the Earth as a self-sustaining system and secondly, helps humans to be able to predict events and processes. Topics included under cycles are as follows:

- Life cycles of the mosquito
- Water cycle
- Day and night cycles
- Convection and ventilation
- Reproduction in plants and animals
- Land and sea breezes etc.

Systems

Pupils should recognise that a system is anything that consists of parts that work together to perform a function. There are natural systems and there are artificial systems. Examples of systems in nature are the solar system, the circulatory and respiratory systems. Examples of artificial systems are electrical systems. A study of these systems allows humans to understand how systems operate and how parts of systems influence and interact with each other to perform a function. Topics included in this topic are as follows:

- Parts of plants and their functions
- Digestive and skeletal / muscular systems
- Respiratory and circulatory systems
- Electrical systems

Energy

Pupils should appreciate that energy affects both living and non-living things. Energy makes changes and movement possible in everyday life. There are many forms of energy and one form can be converted to another. Humans use energy in many ways for different purposes. Humans are not the only living things that use energy; all living things obtain energy and use it to carry out life processes. The study of this theme will allow pupils to appreciate the importance and uses of energy and the need to conserve it. Topics covered under this theme include the following:

- Light
- Photosynthesis and respiration
- Forms of energy and conversions
- Change of state of matter

Interactions of matter

Pupils should appreciate that the study of the interactions between and within systems helps humans to better understand the environment and their role in it. There are many types of interactions. There are interactions between the living world and the environment at various levels; there are interactions which occur within an organism, between organisms as well as between organisms and the environment. There are also interactions between forces and objects. At the societal level, it is the interaction of humans with their environment that drives the development of Science and Technology. At the same time, Science and Technology influences the way humans interact with their environment. Pupils will therefore be better able to appreciate the consequences of their actions by a study of the interactions between humans and their environment. Topics treated under this theme include the following:

- Magnets
- Simple machines
- Forces
- Pollution
- Chemical processes in nature e.g. rusting.

The structure and organization of the syllabus is indicated in the chart below.

STRUCTURE AND ORGANISATION OF THE SYLLABUS

THEMES	PRIMARY 4	PRIMARY 5	PRIMARY 6
DIVERSITY OF MATTER	Unit 1: Groups of Plants Unit 2: Groups of Animals Unit 3: Metals and non-metals Unit 4: Rusting Unit 5: Measurement of temperature	Unit 1: Parts of flowers and their functions Unit 2: Measurement	Unit 1: Fruits and Seeds Unit 2: Air Unit 3: States of Matter Unit 4: Measurement of Time.
CYCLES	Unit 1: Ventilation	Unit 1: Water Cycle	Unit 1: Life cycles of Okro and Maize plant Unit 2: Life cycles of the mosquito
SYSTEMS	Unit 1: The Solar system	Unit 1: The Human Body systems	Unit 1: The digestive system of Humans Unit 2: Simple Electrical Circuit
ENERGY	Unit 1: Sources of Energy	Unit 1: Forms of Energy Unit 2: Conversion of Energy Unit 3: Change of State of Matter Unit 4: Basic Electronics	Unit 1: Respiration Unit 2: Heat Unit 3: Electrical Circuit Unit 4: Basic Electronic circuit

THEMES	PRIMARY 4	PRIMARY 5	PRIMARY 6
INTERACTIONS OF MATTER	Unit 1: Forces Unit 2: Inductors and capacitors in an electronic circuit Unit 3: Care of the skin	Unit 1: Magnetism Unit 2: Mixtures Unit 3: Water related diseases Unit 4: HIV/AIDS	Unit 1: Food processing and preservation Unit 2: Food poisoning Unit 3: Natural Disaster-Flooding

TIME ALLOCATION

The suggested time allocation for Natural Science for Primary 4-6 is six periods of thirty minutes each, a week. The six periods should preferably be divided into three double periods. Variations in time allocation may however, be announced by GES as and when necessary and schools will be required to comply.

SUGGESTIONS FOR TEACHING THE SYLLABUS

A class may consist of pupils of different physical problems and mental abilities. Some of the children may have high mental ability, while others may be slow learners; some may be dyslexic and not able to read or spell well as the others in the class. All these are special needs children who need special attention. Ensure that you give equal attention to all pupils in your class to provide each of them equal opportunities for learning. Pupils with disabilities may have hidden talents that can only come to light if you provide them the necessary encouragement and support in class.

General Objectives

General Objectives have been listed at the beginning of each section of the syllabus, that is, just below the theme of the section. The general objectives flow from the general aims for teaching natural science listed on page (ii) of this syllabus. The general objectives form the basis for the selection and organization of the themes and their unit topics. Read the general objectives very carefully before you start teaching. After teaching all the units, go back and read the general aims and general objectives again to be sure you have covered both of them adequately in the course of your teaching.

Years and Units

The syllabus has been planned on the basis of Years and Units. Each year's work is covered in a number of units sequentially arranged and in a meaningful manner such that each unit's work will provide the necessary and enabling skills for the next unit. A description of the contents of each column is as follows:

Syllabus Structure

The syllabus is structured in five columns: Units, Specific Objectives, Content, Teaching and Learning Activities and Evaluation. A description of the contents of each column is as follows:

Column 1 - Units: The units in column 1 are the major topics of the year. You are expected to follow the unit topics according to the linear order in which they have been presented. However, if you find at some point that teaching and learning in your class will be more effective if you branched to another unit before coming back to the unit in the sequence, you are encouraged to do so.

Column 2 - Specific Objectives: Column 2 shows the Specific Objectives for each unit. The specific objectives begin with numbers such as 1.2.5 or 3.4.1. These numbers are referred to as "Syllabus Reference Numbers". The first digit in the syllabus reference number refers to the year/class; the second digit refers to the unit, while the third refer to the rank order of the specific objective. For instance 1.2.5 means Year 1 or Primary 1, Unit 2 (of Class 1) and Specific Objective 5. In other words 1.2.5 refers to Specific Objective 5 of Unit 2 of Primary 1. Similarly, the syllabus reference number 3.4.1 simply means Syllabus Objective number 1 of Unit 4 of Primary 3. Using syllabus reference numbers provide an easy way for communication among teachers and educators. It further provides an easy way for selecting objectives for test construction. For instance, if Unit 4 of Primary 3 has seven specific objectives 3.4.1 - 3.4.7, a teacher may want to base his/her test items/questions on objectives 3.4.4 to 3.4.7 and not use the other first three objectives. In this way, a teacher would sample the objectives within units to be able to develop a test that accurately reflects the importance of the various specific objectives and skills taught in class.

You will note also that specific objectives have been stated in terms of the pupil i.e. what the pupil will be able to do during and after instruction and learning in the unit. Each specific objective hence starts with the following "*The pupil will be able to.....*" This in effect, means that you have to address the learning problems of each individual pupil. It means individualizing your instruction as much as possible such that the majority of pupils will be able to master the objectives of each unit of the syllabus. The teaching of Natural Science should be activity-oriented for two important reasons. The activity approach challenges the children to develop their own ideas, and secondly makes the subject more meaningful and relevant to them.

As has been said already, the order in which the topics appear should not necessarily be the teaching order. There should however, be a linkage in the order in which the units and specific objectives are treated. The teacher will have to study the syllabus carefully and plan ahead the activities the pupils will carry out during a particular period. Knowing the requirements of a particular lesson, the teacher should assemble the materials which will be required for the activities well in advance. The collection must be done by both the teacher and the pupils. Other materials like bottles, cans, match boxes, etc. may be continually collected and stored to be used when required. When materials are not available in the immediate environment, the teacher should try to contact resource persons or persons in higher institutions for help.

As pupils begin work on the activities of each lesson, the teacher should serve as a facilitator and motivate the pupils in various ways to sustain their interest. The teacher should pay particular attention to children's questions and should also ask questions that will guide them to other areas of useful

investigation. During the last ten minutes of the class activity, all pupils should come together to discuss their observations. The teacher must involve all pupils in the discussion.

Column 3 - Content: The "content" in the third column of the syllabus presents a selected body of information that you will need to use in teaching the particular unit. In some cases, the content presented is quite exhaustive. In some other cases, you could add some more information based upon your own training and based also on current knowledge and information.

Column 4 - Teaching/Learning Activities (T/LA): T/LA that will ensure maximum pupil participation in the lessons is presented in Column 4. The General Aims of the subject can only be most effectively achieved when teachers create learning situations and provide guided opportunities for pupils to acquire as much knowledge and understanding of science as possible through their own activities. Pupils' questions are as important as teacher's questions. There are times when the teacher must show, demonstrate, and explain. But the major part of a pupil's learning experience should consist of opportunities to explore various mathematical situations in their environment to enable them make their own observations and discoveries and record them. Teachers should help pupils to learn to compare, classify, analyze, look for patterns, spot relationships and come to their own conclusions/deductions. Avoid rote learning and drill-oriented methods and rather emphasize participatory teaching and learning in your lessons. You are encouraged to re-order the suggested teaching/learning activities and also add to them where necessary in order to achieve optimum pupil learning.

A suggestion that will help your pupils acquire the capacity for analytical thinking and the capacity for applying their knowledge to problems and issues is to begin each lesson with a practical problem. Select a practical problem for each lesson. The selection must be made such that pupils can use knowledge gained in the previous lesson and other types of information not specifically taught in class. The learning of any skill considered important must start early. From age six, engage your pupils in analytical thinking and practical scientific problem solving techniques.

Column 5 - Evaluation: Suggestions and exercises for evaluating the lessons of each unit are indicated in Column 5. Evaluation exercises can be in the form of oral questions, quizzes, class assignments, essays, project work, etc. Try to ask questions and set tasks and assignments, etc. that will challenge pupils to apply their knowledge to issues and problems as has already been said, and that will engage them in developing solutions, and in developing observational and investigative skills as a result of having undergone instruction in this subject. The suggested evaluation tasks are not exhaustive. You are encouraged to develop other creative evaluation tasks to ensure that pupils have mastered the instruction and behaviours implied in the specific objectives of each unit.

Lastly, bear in mind that the syllabus cannot be taken as a substitute for lesson plans. It is necessary that you develop a scheme of work and lessons plans for teaching the units of this syllabus.

DEFINITION OF PROFILE DIMENSIONS

The concept of profile dimensions was made central to the syllabuses developed from 1998 onwards. A 'dimension' is a psychological unit for describing a particular learning behaviour. More than one dimension constitutes a profile of dimensions. A specific objective may be stated with an

action verb as follows: The pupil will be able to describe.... etc. Being able to "describe" something after the instruction has been completed means that the pupil has acquired "knowledge". Being able to explain, summarize, give examples, etc. means that the pupil has understood the lesson taught.

Similarly, being able to develop, plan, solve problems, construct, etc. means that the pupil can "apply" the knowledge acquired in some new context. Each of the specific objectives in this syllabus contains an "action verb" that describes the behaviour the pupil will be able to demonstrate after the instruction. "Knowledge", "Application", etc. are dimensions that should be the prime focus of teaching and learning in schools. It has been realized unfortunately that schools still teach the low ability thinking skills of knowledge and understanding and ignore the higher ability thinking skills. Instruction in most cases has tended to stress knowledge acquisition to the detriment of the higher ability behaviours such as application, analysis, etc. The persistence of this situation in the school system means that pupils will only do well on recall items and questions and perform poorly on questions that require higher ability thinking skills such as application of mathematical principles and problem solving. For there to be any change in the quality of people who go through the school system, pupils should be encouraged to apply their knowledge, develop analytical thinking skills, develop plans, generate new and creative ideas and solutions, and use their knowledge in a variety of ways to solve mathematical problems while still in school. Each action verb indicates the underlying profile dimension of each particular specific objective. Read each objective carefully to know the profile dimension toward which you have to teach.

The three profile dimensions specified for Natural Science (Primary 4-6) are the same as those for Primary 1-3. The dimensions for teaching, learning and testing and their respective weights are as follows:

Knowledge and Understanding	20%
Application of Knowledge	20%
Attitudes and Process Skills	60%

Each of the dimensions has been given a percentage weight that should be reflected in teaching, learning and testing. The weights indicated on the right of the dimensions show the relative emphasis that the teacher should give in the teaching, learning and testing.

You will notice that "knowledge and understanding" and "application of knowledge", have been given equal weight, and that greater emphasis has been placed on "attitudes and process skills" for the reason that pupils at this age need to acquire the necessary scientific process skills to be able to build their store of scientific concepts and principles.

The explanation and key words involved in each of the profile dimensions are indicated on the next page.

Knowledge and Understanding (KU)

Knowledge The ability to:
Remember, recall, identify, define, describe, list, name, match, state principles, facts and concepts. Knowledge is simply the ability to remember or recall material already learned and constitutes the lowest level of learning.

Understanding The ability to:
Explain, summarise, translate, rewrite, paraphrase, give examples, generalise, estimate or predict consequences based upon a trend.
Understanding is generally the ability to grasp the meaning of some material that may be verbal, pictorial, or symbolic.

Application of Knowledge (AK)

Ability to use knowledge or apply knowledge, as implied in this syllabus, has a number of learning/behaviour levels. These levels include application, analysis, synthesis, and evaluation. These may be considered and taught separately, paying attention to reflect each of them equally in your teaching. The dimension “Application of Knowledge” is a summary dimension for all four learning levels. Details of each of the four sub-levels are as follows:

Application	The ability to: Apply rules, methods, principles, theories, etc. to concrete situations that are new and unfamiliar. It also involves the ability to produce, solve, operate, plan, demonstrate, discover etc.
Analysis	The ability to: Break down material into its component parts; to differentiate, compare, distinguish, outline, separate, identify significant points etc., recognise unstated assumptions and logical fallacies recognise inferences from facts etc.
Synthesis	The ability to: Put parts together to form a new whole. It involves the ability to combine, compile, compose, devise, plan, revise, design, organise, create, generate etc.
Evaluation	The ability to: Appraise, compare features of different things and make comments or judgement, contrast, criticise, justify, support, discuss, conclude, make recommendations etc. Evaluation refers to the ability to judge the worth or value of some material based on some criteria.

You will note from the above that evaluation is the highest form of thinking and is therefore the most difficult behaviour. This accounts for the generally poor performance of students and people generally on tasks that call for evaluative thinking. Start to develop this important skill early in your pupils by giving them lots of chances to do evaluative thinking.

Attitudes and Process Skills

The scientific method is the means by which a scientist solves problems or seeks to gain information about events. Pupils should be exposed to situations that challenge them to raise questions and attempt to solve problems. The more often they are faced with these challenges, the more likely they are to develop positive attitude toward science, and the more likely they are to develop the relevant process skills. Details of each sub-skill in the “Attitudes and Process Skills” dimension are as follows:

A Basic Process Skills

- i. *Planning:*
Defining the problem and thinking of ways to solve it through experimentation or some structured investigation.
- ii. *Designing the experiment:*
Determining the nature of the experiment and listing the requirements and materials necessary for the experiment or investigation.
- iii. *Observing:*
Use of the senses, the microscope and other tools to make accurate observations of phenomena.
- iv. *Manipulating:*
Skilful handling of objects and tools to accomplish a task.
- v. *Measuring:*
Accurate use of measuring instruments and equipment.
- vi. *Evaluating:*
Assessing the results of an experiment and finding conclusions or inferring conclusions from the experiment; determining whether results confirm one's prior prediction or not.
- vii. *Generalising:*
Extending the conclusions of an experiment to other similar situations; being able to predict possible solutions to similar problems based on the results of a previous experiment.
- viii. *Communicating:*
Ability to communicate one's finding accurately, either orally or in written reports.
- ix. *Analysing*
This is the skill of identifying the parts of objects, information or processes, and the patterns and relationships between these parts.
- x. *Generating*
This is the skill of adding to, extending or connecting given ideas by tapping into prior knowledge or gathered information
- xi. *Classifying*
This is the skill of grouping objects or events based on common characteristics.

B. Integrated Processes

Integrated processes are complex operations which call upon the use of several basic process skills. At the primary level, the integrated processes expected of pupils are:

i. *Creative Problem Solving*

This is a process of analysing a problem and choosing a novel but relevant solution in order to remedy or alter a problem situation.

ii. *Decision-Making*

Decision-making is the process of establishing and applying criteria to select from equally attractive alternatives. The process of establishing criteria involves consideration of the consequences and values.

iii. *Investigation*

This involves formulating questions or hypotheses, devising fair methods and carrying out those methods to find out answers to the questions or to verify the hypotheses.

In science process teaching and learning, teachers should teach each of the basic process skills explicitly through the use of appropriate activities and then meaningfully infuse the teaching of these skills in their lessons.

Attitudes:

For success in any endeavour, the individual needs to cultivate attitudes relevant to that area of endeavour. The learning of Integrated Science should aim at the acquisition of the following attitudes by pupils:

i. *Curiosity:*

The inclination or feeling toward seeking information about how things work in a variety of fields.

ii. *Perseverance:*

The ability to pursue a problem until a satisfying solution is found.

iii. *Flexibility in ideas:*

Willingness to change opinion in the face of more plausible evidence

iv. *Respect for Evidence:*

Willingness to collect and use data in one's investigation, and also have respect for data collected by others.

v. *Reflection:*

The habit of critically reviewing ways in which an investigation has been carried out to see possible faults and other ways in which the investigation could be improved upon.

The teacher should endeavour to ensure that pupils cultivate the above scientific attitudes and process skills as a prelude to effective work in integrated science.

The action verbs provided under the various profile dimensions should help you to structure your teaching such as to achieve the effects needed. Select from the action verbs provided for your teaching, for evaluation exercises and for test construction. This will ensure that you give your pupils the chance to develop good scientific skills, and the capacity for excellent performance in school and in life. Check the weights of the profile dimensions to ensure that you have given the required emphasis to each of the dimensions in your teaching and assessment.

FORM OF ASSESSMENT

It must be emphasised again that it is important that both instruction and assessment be based on the profile dimensions of the subject. In developing assessment procedures, select specific objectives in such a way that you will be able to assess a representative sample of the syllabus objectives. Each specific objective in the syllabus is considered a criterion to be achieved by the pupil. When you develop a test that consists of items or questions that are based on a representative sample of the specific objectives taught, the test is referred to as a "Criterion-Referenced Test". In many cases, a teacher cannot test all the objectives taught in a term, in a year etc. The assessment procedure you use i.e. class tests, home work, projects etc. must be developed in such a way that it will consist of a sample of the important objectives taught over a period.

End-of-Term Examination

The end-of-term examination is a summative assessment system and should consist of a sample of the knowledge and skills pupils have acquired in the term. The end-of-term test for Term 3 should be composed of items/questions based on the specific objectives studied over the three terms, using a different weighting system such as to reflect the importance of the work done in each term in appropriate proportions. For example, a teacher may build an end-of- Term 3 test in such a way that it would consist of the 20% of the objectives studied in Term 1, 20% of the objectives studied in Term 2, and 60% of the objectives studied in Term 3.

The diagram below shows the recommended examination structure in Natural Science for Primary 1-3 for the end-of-term test. The structure consists of one examination paper and a Practical Test which will consist of questions on "attitudes and processes". The Practical Test will be the School Based Assessment (SBA), the marks for which will be collected over the term's work. You will note that the weighting for theory and practice in the subject at this level is 40:60. This has been done so that the emphasis in the teaching and learning of natural science at this level will concentrate more on practical activities needed for the development of "attitudes and process skills".

Distribution of Examination Paper Weights and Marks

Dimensions	Test Paper	Practical Test (SBA: Attitudes and Process Skills)	Total
Knowledge and Understanding	20	-	20
Application of Knowledge	20	-	20
Attitudes and Process Skills	-	60	60
Total	40	60	100

The end-of-term Test Paper will be a blend of objective-type and structured questions (i.e. short answers). The paper will test “knowledge and understanding” and “application of knowledge” and should have a maximum of 40 items. The Primary 4 test paper could contain 30 items; Primary 5, 30 items and Primary 6, forty items. The total marks for the test should be scaled to 40. The 60 marks left should be derived from SBA which focuses on “attitudes and process skills”. The suggested number of items for the end-of-term test is as follows:

- Primary 4: 30 items for 45 minutes
- Primary 5: 30 items for 45 minutes
- Primary 6: 40 items for 60 minutes

Combining SBA marks and End-of-Term Examination Marks

The new SBA system is important for raising pupils’ school performance. For this reason, the 60 marks for the SBA will be scaled to 50. The total marks for the end of term test will also be scaled to 50 before adding the SBA marks and end-of-term examination marks to determine pupils’ end of term results. The SBA and the end-of-term test marks will hence be combined in equal proportions of 50:50. The equal proportions will affect only assessment in the school system. It will not affect the SBA mark proportion of 30% used by WAEC for determining examination results at the BECE.

GUIDELINES FOR SCHOOL BASED ASSESSMENT

A new School Based Assessment system (SBA), formally referred to as Continuous Assessment, will be introduced into the school system from September 2008. SBA is a very effective system for teaching and learning if carried out properly. The new SBA system is designed to provide schools with an internal assessment system that will help schools to achieve the following purposes:

- Standardize the practice of internal school-based assessment in all schools in the country
- Provide reduced assessment tasks for each of the primary school subjects
- Provide teachers with guidelines for constructing assessment items/questions and other assessment tasks
- Introduce standards of achievement in each subject and in each class of the school system
- Provide guidance in marking and grading of test items/questions and other assessment tasks
- Introduce a system of moderation that will ensure accuracy and reliability of teachers' marks
- Provide teachers with advice on how to conduct remedial instruction on difficult areas of the syllabus to improve pupil performance

The new SBA system will consist of 12 assessments a year instead of the 33 assessments in the previous continuous assessment system. This will mean a reduction by 64% of the work load compared to the previous continuous assessment system. The 12 assessments are labeled as Task 1, Task 2, Task 3 and Task 4. Task 1-4 will be administered in Term 1; Tasks 5-8 will be administered in Term 2, and Tasks 9-12 administered in Term 3. Task 1 will be administered as an individual test coming at the end of the first month of the term. The equivalent of Task 1 will be Task 5 and Task 9 to be administered in Term 2 and Term 3 respectively. Task 2 will be administered as a Group Exercise and will consist of two or three instructional objectives that the teacher considers difficult to teach and learn. The selected objectives could also be those objectives considered very important and which therefore need pupils to put in more practice. Task 2 will be administered at the end of the second month in the term. Task 3 will also be administered as individual test under the supervision of the class teacher at the end of the 11th or 12 week of the term.

Task 4 (and also Task 8 and Task 12) will be a project to be undertaken throughout the term and submitted at the end of the term. Schools will be supplied with 9 project topics divided into three topics for each term. A pupil is expected to select one project topic for each term. Projects for the second term will be undertaken by teams of pupils as Group Projects. Projects are intended to encourage pupils to apply knowledge and skills acquired in the term to write an analytic or investigative paper, write a poem 9 (as may be required in English and Ghanaian Languages), use science and mathematics to solve a problem or produce a physical three-dimensional product as may be required in Creative Arts and in Natural Science.

Apart from the SBA, teachers are expected to use class exercises and home work as processes for continually evaluating pupils' class performance, and as a means for encouraging improvements in learning performance.

Marking SBA Tasks

Pupils at Lower and Upper Primary Levels are expected to undertake assignments that may involve investigations, experiments or the development of a three-dimensional product either as home work or as the term's project. The following guidelines are provided for making assignments of such nature.

- | | | |
|----|---------------|-----|
| 1. | Process | 30% |
| 2. | Data analysis | 40% |
| 3. | Conclusion | 30% |

The processes and attitudes already listed should be assessed and given a weight 30%. How the pupil compares data or other sources of information; how they identify important information from poor information and how they put together the data they arrive at from investigations, experiments and the production of artistic work such as paintings and 3-D work (in Creative Arts), should be scored at 40%. Children have to be taught how to make conclusions from comparisons and analysis of data. This is very as a step for training the child in generating ideas and new forms of knowledge. The ability to make conclusions has been given a weight of 30%.

The marks derived from projects, the end of month tests and home work specifically designed for the SBA should together constitute the School Based Assessment component and weighted 60 per cent. The emphasis is to improve pupils' learning by encouraging them to produce essays, poems, and artistic work and other items of learning using appropriate process skills, analysing information and other forms of data accurately and make generalizations and conclusions. The SBA will hence consist of:

- Ø End-of-month tests
- Ø Home work assignments (specially designed for SBA)
- Ø Project

Other regulations for the conduct of SBA will reach schools from GES.

GRADING PROCEDURE

In marking your class examination scripts, it is very important that you develop a marking scheme. A marking scheme, as you may be aware, consists of the points for the best answer you expect for each essay question or structured question, and the mark(s) allocated for each point raised by the pupil as

well as the total marks for the question. For instance, if a question carries 10 marks and you expect 4 points in the best answer, you could allocate 2 marks (or part of it, depending upon the quality of the point raised by the pupil) to each point raised, totalling 8 marks, and then give the remaining 2 marks or part of it, for organisation of answer. For objective test papers, you may develop an answer key to speed up the marking.

To improve assessment and grading and also introduce uniformity in schools, it is recommended that schools adopt the following grade boundaries for assigning grades:

Grade A:	80 - 100%	-	Excellent
Grade B:	70 - 79%	-	Very Good
Grade C:	60 - 69%	-	Good
Grade D:	45 - 59%	-	Credit (Satisfactory)
Grade E:	35 - 44%	-	Pass
Grade F:	≤ 34%	-	Fail

The grading system presented above shows the letter grade system and equivalent grade boundaries. In assigning grades to pupils' test results, or any form of evaluation, you may apply the above grade boundaries and the descriptors. The descriptors (Excellent, Very Good etc) indicate the meaning of each grade. For instance, the grade boundary for "Excellent" consists of scores between 80 - 89. Writing "80%" for instance, without writing the meaning of the grade, or the descriptor for the grade i.e. "Excellent", does not provide the pupil with enough information to evaluate his/her performance in the assessment. You therefore have to write the meaning of the grade alongside the score you write. Apart from the score and the grade descriptor, it will be important also to write a short diagnosis of the points the pupil should consider in order to do better in future tests etc. Comments such as the following may also be added to the grades:

- Keep it up
- Has improved
- Could do better
- Hardworking
- Not serious in class
- More room for improvement, etc.

Note that the grade boundaries above are also referred to as grade cut-off scores. When you adopt a fixed cut-off score grading system as in this example, you are using the criterion-referenced grading system. By this system a pupil must make a specified score to earn the appropriate grade. This system of grading challenges pupils to study harder to earn better grades. It is hence very useful for achievement testing and grading.

PRIMARY FOUR

SECTION 1 DIVERSITY OF MATTER

General Objectives: The pupil will:

1. recognise the variety of living and non-living things and their interconnectedness.
2. recognize that non-living things have characteristics that can be utilized to change the environment
3. recognize that non-metals serve as insulators and prevent heat and electricity from leaking out of metals.
4. show understanding of the causes and prevention of rusting of iron

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 GROUPS OF PLANTS	The pupil will be able to: 1.1.1 sort plants into different groups. 1.1.2 group plants according to their root system 1.1.3 group plants according to the characteristics of their leaves. 1.1.4 classify plants according to the characteristics of the stem 1.1.5 list some uses of plants.	Groups of plants Erect Creeping Climbing Root systems of plants Characteristics of leaves: Broad, narrow, thick and thin, colour, etc. Characteristics of the stem: long, short, hard, soft, etc. Uses of Plants	Let pupils: go on a nature walk and collect different plants. sort plants into climbing, creeping and erect. sort plants into taproot and fibrous root system sort leaves into broad, narrow, thick and thin. sort plants according to the length of stem(long/short) and hardness(hard/soft). discuss uses of plants.	List three ways in which plants can be grouped. How is the root of maize different from that of a mango? Mention four uses of plants to humans.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 GROUPS OF ANIMALS	<p>The pupil will be able to:</p> <p>1.2.1 group animals according to their movement and their living places.</p> <p>1.2.2 group animals according their body covering.</p> <p>1.2.3 state the uses of some animals</p> <p>1.2.4 explain the meaning of ‘pet’</p> <p>1.2.5 state the uses of pets.</p> <p>1.2.6 take good care of pets.</p>	<p>Classification of animals based on their movement and living places.</p> <ul style="list-style-type: none"> - Walking, swimming, flying. - Air, water and land. <p>Body coverings of Animals:</p> <ul style="list-style-type: none"> - Scales - Fur - Feathers - Shells - Cuticle <p>Uses of some Animals:</p> <ul style="list-style-type: none"> - Pets - Food - Security - Games - Transportation - Research <p>Meaning of pet</p> <p>Uses of pets</p> <p>Care of pets</p> <ul style="list-style-type: none"> - good diet - clean water - training - good living place. - Health-care by qualified veterinary staff. 	<p>Let pupils:</p> <p>review movement and living places of animals from Primary 2.</p> <p>go on nature walk to observe animals with scales, fur, feathers, shells and cuticle.</p> <p>discuss uses of body covering to animals.</p> <p>build an album of pictures of animals with different body covering.</p> <p>Project: <i>Pupils use questionnaire to extract information from the community on the uses of animals. Pupils write a report on their project.</i></p> <p>Brainstorm to come out with the meaning of the term ‘pet’.</p> <p>Discuss and list some uses of pets.</p> <p>Discuss how to care for pets.</p>	<p>List ten animals and write the way they move.</p> <p>List two animals each that have the following body covering: Scales Feathers Shells Cuticle</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 3 METALS AND NON- METALS	The pupil will be able to:		Let pupils:	
	1.3.1 list some characteristics of metals.	Characteristics of Metals <ul style="list-style-type: none"> - Usually hard - Shiny surfaces when new - Can be beaten into shapes - Conduct heat and electricity - Produce high pitch sound when struck - Make musical sound. - Metals are heavy, some are light - Often in solid state - Have different colours - Can be drawn into wires - Very strong 	build a stock of metals. explore and state the characteristics of metals as stated in the content.	State two characteristics of metals.
	1.3.2 group materials into metals and non-metals	Metals and non-metals	build stock of materials (metals and non-metals). sort out metals from the collection of materials based on the characteristics of metals.	
	1.3.3 name some metals	Silver, Iron, Copper, Gold, Zinc, Aluminium,	discuss names of some metals. <i>Note: chemical symbols not required.</i>	
	1.3.4 state some uses of metals in everyday life	Uses of metals: <ul style="list-style-type: none"> - Construction - Building cars, train, airplane - Cutlery - Computers etc 	explore the uses of metals in everyday life	Distinguish between metals and non-metals
1.3.5 make simple tools from metals	Making simple tools from metals.	design and make toys, simple kitchen tools vehicles etc. from metals. <i>Note: the toys must be powered with motors to move.</i>		

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 4 RUSTING	The pupil will be able to:		Let pupils:	
	1.3.6 list some characteristics of non-metals.	Characteristics of non-metals: <ul style="list-style-type: none"> - Have dull surfaces. - Poor conductors of heat and electricity - Make low pitch sound - Break easily(brittle) 	build stock of non-metals and their materials. explore the characteristics of non-metals as stated in the content.	
	1.3.7 name some non-metals	Non-Metals e.g. Plastic, Glass, Polythene, Sulphur, Wood, Rubber, Carbon.	explore the community, identify and record materials made up of non-metals. design and construct a model of a house with non-metals. observe and electric circuit and identify the non-metal component from the metals.	
	1.3.8 describe some uses of non-metals	Applications of non-metals	describe various ways in which non-metals are used.	
	1.4.1 explain causes of rusting	Causes of rusting	collect some new iron nails and examine the surfaces and record in groups, pupils expose new iron nails to air and water and record what happens after three days. compare the change in the nails used for the experiment nails with the new nails.	
1.4.2 explain the effects of rusting on iron.	Effects of rusting on Iron	collect old iron roofing sheets, buckets and compare them with new ones. discuss reasons for the change.		

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 5 MEASUREMENT OF TEMPERATURE	The pupil will be able to:		Let pupils:	
	1.4.3 clean rust from the surface of iron	Cleaning rust from the surface of iron	use sand paper to scrub the surface of rusty nail or cutlery. place rusty iron metals in lemon juice and observe what happens after three days.	What are the conditions necessary for iron to rust.
	1.4.4 demonstrate how to prevent iron from rusting.	Prevention of rusting: - Painting - Oiling - Insulating the surface of iron from air etc.	take two new nails, paint one, leave the other and expose both to air and water and observe what happens after 3days. discuss and demonstrate different methods of preventing iron from rusting discuss the effects of rusting on house hold items and construction work.	
	1.5.1 infer that temperature is a measure of how hot a substance is	Meaning of temperature.	discuss the meaning of the term 'temperature'	
	1.5.2 identify clinical thermometer from a laboratory thermometer.	Differences between laboratory and clinical thermometers.	observe the structural difference between laboratory and clinical thermometers. teacher to also show the digital thermometer to pupils.	With the help of labeled diagram describe the analogue clinical thermometer.
	1.5.3 State the units for measuring temperature	Units of temperature Degree celsius, °C and degree farenheight, °F	discuss the units for measuring temperature	
	1.5.4 read temperature on a thermometer.	Reading temperature on a thermometer.	observe the calibrations on both the laboratory and clinical thermometers and practice how to read temperature on them. Pour a sachet of 'ice water' into a container and use the laboratory thermometer to measure its temperature.	
1.5.5 handle and use different types of thermometer	Handling and using thermometers.	use the clinical thermometer to measure the body temperature of their classmates. Pupils discuss the body temperatures recorded.		

PRIMARY FOUR

SECTION 2 CYCLES

General Objectives: The pupil will:

1. recognize that there are repeated patterns of change in nature and understand how these patterns arise.
2. recognize ventilation as a purifying mechanism in homes, industry and the environment

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 VENTILATION	<p>The pupil will be able to:</p> <p>2.1.1 demonstrate convection current.</p> <p>2.1.2 explain the concept of convection.</p> <p>2.1.3 explain ventilation in terms of convection current.</p> <p>2.1.4 identify applications of ventilation in everyday life.</p> <p>2.1.5 explain the need to ventilate rooms for good health.</p> <p>2.1.6 describe what leads to poor ventilation in our homes.</p>	<p>Convection as a cycle</p> <p>Meaning of Convection</p> <p>Ventilation and Convection current</p> <p>Applications of ventilation and convection: sea breeze, land breeze, air conditioning, fridge, chimney.</p> <p>Ventilation of rooms.</p>	<p>Let pupils:</p> <p>use experiment to demonstrate convection current discuss the meaning of convection</p> <p>discuss the meaning of convection.</p> <p>discuss ventilation in terms of convection current.</p> <p>discuss everyday life applications of ventilation and convection current. use the principle of convection to explain how sea breeze and land breeze reduce room temperature.</p> <p>discuss and compare their experiences when they first enter their classrooms in the morning to that after two hours when all the windows are opened</p> <p>discuss why our homes and classrooms must be ventilated Develop ways of increasing ventilation in our homes.</p>	<p>With the help of a labelled diagram show how ventilation makes air in room safe for use.</p> <p>With the help of a labeled diagram use convection current to explain sea breeze and land breeze</p>

PRIMARY FOUR

SECTION 3 SYSTEMS

General Objectives: The pupil will:

1. recognise that a system is a whole consisting of parts that work together to perform a function
2. recognize that the moon and planets in the solar system do not give out light
3. infer that an object can be seen when it reflects light or when it is a source of light.
4. show awareness that there is regularity in the movements of the earth and the moon

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 THE SOLAR SYSTEM	The pupil will be able to:		Let pupils:	
	3.1.1 identify the components of the solar system.	Components of the solar system. Sun, Earth, Moon and other planets.	use models or pictures to show the components of the solar system e.g. Sun, earth and Moon and other planet. <i>Note: names of the other planets are not required</i>	What is the difference between luminous and non-luminous bodies?
	3.1.2 distinguish between luminous and non-luminous bodies.	Luminous and non-luminous bodies	discuss materials that produce light on their own and those that do not produce light on their own but absorb or reflect light from other bodies.	List materials that produce light on their own.
	3.1.3 describe the movement of the moon around the earth.	Movement of the Moon around the Earth	use models to demonstrate that the moon goes round the earth and it does so in a regular manner.	
	3.1.4 explain that the sun, moon and the earth form part of the solar system.	Sun, Moon and the Earth as part of the solar system.	use models to describe the solar system. watch a video clip/CD-ROM on the solar system and discuss their observation. Pupils to sketch the positions of the Sun, Moon and the Earth.	
	3.1.5 explain the concept of satellite.	Satellite: a smaller body that moves round a bigger body.	demonstrate the concept of satellite using a football and a tennis ball.	List some uses of man-made satellite.
3.1.6 list some uses of man-made satellite.	Uses of man-made(artificial) satellites: Communication, space exploration, observation of weather patterns etc.	discuss the uses of man-made satellites e.g. transmission of radio and television programmes.		

PRIMARY FOUR

SECTION 4 ENERGY

General Objectives: The pupil will:

1. Recognise that energy has a source, can be transferred and can be transformed into various forms.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 SOURCES OF ENERGY	<p>The pupil will be able to:</p> <p>4.1.1 explain the term 'energy'.</p> <p>4.1.2 identify some sources of energy</p> <p>4.1.3 demonstrate some uses of solar energy</p>	<p>Meaning of energy</p> <p>Sources of energy: Food, Solar, Wind, Water, Cell/battery, Petroleum etc.</p> <p>Solar energy can burn</p> <p>Boiling water with solar energy</p>	<p>Let pupils:</p> <p>discuss the meaning of term 'energy'</p> <p>discuss sources of energy. gather materials such as, cells/battery, kerosene and hand lens and a sheet of paper.</p> <p>use hand lens to direct sunlight until a small bright spot is seen on the paper. Keep the lens at this position for about five minutes. Observe and discuss what happens.</p> <p>place an empty Milo tin painted black in an open space but not under a shade. Place a hand lens above the tin. Adjust the hand lens until a small bright spot is seen at the base of the Milo tin. Keep the hand lens at this position for about ten minutes and observe what happens. Pour the same volume of water into another black painted Milo tin and use it as a control.</p>	<p>List as many sources of energy as possible.</p> <p>Give five reasons why peoples get worried when there is no electricity.</p>

PRIMARY FOUR

SECTION 5 INTERACTIONS OF MATTER

General Objectives: The pupil will:

1. appreciate that interaction between and within matter helps humans to better understand the environment and their role in it.
2. Recognise forces in terms of the effects they produce.
3. Recognize the relationship between skin diseases, poor personal hygiene and unsanitary environmental conditions

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 FORCES	<p>The pupil will be able to:</p> <p>5.1.1 explain the term 'force'</p> <p>5.1.2 describe different types of forces</p> <p>5.1.3 describe the effects of a force</p>	<p>Forces : A push or pull</p> <p>Examples of forces: <ul style="list-style-type: none"> - Frictional force - Elastic spring force - Magnetic force - Gravitational force - Compression force </p> <p>Effects of a force: <ul style="list-style-type: none"> - A force can move a stationary object. - A force can speed up, slow down or change the direction of an object in motion. - A force can stop a moving object. - A force may change the shape of objects. </p>	<p>Let pupils:</p> <p>brainstorm and come out with the meaning of force.</p> <p>discuss examples of forces in nature. demonstrate the uses of friction in everyday life. e.g. walking, climbing etc.</p> <p>demonstrate the effects of forces as described in the content.</p>	<p>State two uses of friction in everyday life.</p> <p>Explain why a kicked ball moves and slowly comes to a stop.</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 INDUCTORS AND CAPACITORS IN AN ELECTRONIC CIRCUIT	<p>The pupil will be able to:</p> <p>5.2.1 design and make an inductor or coil</p> <p>5.2.2 investigate the behaviour of inductor and capacitor when connected in a d.c. circuit.</p>	<p>Making an inductor</p> <p>Inductor or coil</p> <p>Capacitor</p>	<p>Let pupils:</p> <p>wind a length of an insulated copper wire on a small soft iron core (nail). Keep the winding fixed on the core with a piece of masking tape.</p> <p>construct a simple circuit made up of a dc battery source (torchlight battery), a switch, a resistor R, an inductor (coil) in series with an LED. Keep the switch open.</p> <p>close the switch and observe closely the effect on the LED.</p> <p>wait for five minutes. Now carefully open the switch and observe what happens.</p> <p>repeat the above process using an air-core coil (coil without nail)</p> <p>compare the results</p> <p>replace the inductor or coil with a capacitor and note the effects when the switch is closed and when it is opened.</p>	<p>Explain the behaviour of an inductor and capacitor when connected in a dc circuit.</p>
UNIT 3 CARE OF THE SKIN	<p>5.3.1 name some diseases of the skin</p> <p>5.3.2 describe preventive measures for some common skin diseases.</p>	<p>Diseases of the skin</p> <ul style="list-style-type: none"> - Ringworm - Eczema - Beriberi - Scabies - Leprosy - Chicken pox - Measles <p>Prevention of skin diseases.</p>	<p>discuss diseases that affect the skin</p> <p>Identify the causes of some skin diseases</p> <p>discuss prevention of skin diseases.</p> <p>Note: <i>Teacher to invite a Health worker to give a talk on the occurrence and prevention of skin diseases.</i></p>	<p>What are the causes and prevention of eczema and scabies?</p>

PRIMARY FIVE

SECTION 1 DIVERSITY OF MATTER

General Objectives: The pupil will:

1. recognise the variety of living and non-living things and their interconnectedness.
2. be aware of the parts and functions of the flower.
3. acquire skills on how to measure areas and volumes of objects

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 PARTS OF FLOWERS AND THEIR FUNCTIONS	The pupil will be able to: 1.1.1 describe a flower 1.1.2 identify the four main parts of a flower and state their functions 1.1.3 describe pollination and fertilization 1.1.4 State the uses of flowers	The flower: part of the plant that produces fruits and seeds. Parts of a flower: Sepal, petal, pistil and stamen. Pollination and fertilization Uses of flowers. - Make fruits and seeds - Beautifies the environment. - Source of dye etc.	Let pupils: go on a nature walk. collect different types of flowers. examine the flowers and report on colour, smell, shape, animals found on the flower. separate and identify the parts of a flower. draw and label the parts of the flower. discuss the functions of the parts of the flower. Mold a flower and colour it. discuss the processes involved in pollination and fertilization discuss the uses of flowers Watch a digitized/video clip of the development of a flower	What makes flowers useful? State some uses of flowers.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 MEASUREMENT	<p>The pupil will be able to:</p> <p>1.2.1 measure the area of a regular plane figure</p> <p>1.2.2 measure the volume of a regular object</p>	<p>Measurement of Area of plane figures: Square, Rectangle, and Triangle.</p> <p>Measurement of volume of objects: Cube and cuboid</p>	<p>Let pupils:</p> <p>measure the area of plane figures in square centimeters. determine the area of the classroom in square meters.</p> <p>measure the volume of regular objects, e.g. cube and cuboids. compare the volumes obtained to the volumes when the objects are totally immersed in water in graduated measuring cylinders.</p> <p>find the volume of a box.</p>	<p>Find the area of the square base of an aluminium tin of dimension 3cm x 5cm. If the height of the tin is 10cm, what is the volume of the tin in centimeter cube</p>

PRIMARY FIVE

SECTION 2 CYCLES

General Objectives: The pupil will:

1. recognise that there are repeated patterns of change in nature and understand how these patterns arise.
2. show understanding of the roles of condensation, evaporation and transpiration in the water cycle.
3. show understanding of the importance of the water cycle.
4. show an awareness of the need to conserve water.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 WATER CYCLE	<p>The pupil will be able to:</p> <p>2.1.1 explain some terms associated with the water cycle</p> <p>2.1.2 demonstrate loss of water from plants into the atmosphere.</p>	<p>Some terms associated with the water cycle: Evaporation, transpiration, condensation and precipitation</p> <p>Transpiration.</p>	<p>Let pupils:</p> <p>discuss the terms evaporation, transpiration, condensation and precipitation. Heat water until it boils. Cover the boiling water with a sheet of transparent glass. Record and explain your observation. Pupils to watch video clip/CD-ROM on condensation and evaporation</p> <p>observe a dry potted plant. Cover potted plant/leaves of plant with a dry transparent polythene. observe any changes in the polyethylene bag after two hours.</p> <p><i>Note: Plant should have no water on the leaves at the beginning of the experiment.</i></p>	<p>With the help of a labelled diagram explain the water cycle.</p> <p>Trace how water from plants and rivers becomes rain</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
WATER CYCLE Cont.	<p>The pupil will be able to:</p> <p>2.1.3 describe the water cycle</p> <p>2.1.4 describe how water is conserved in the home</p>	<p>Water cycle</p> <p>Ways of conserving water in the home.</p>	<p>Let pupils:</p> <p>trace the path of water as it cycles through the atmosphere.</p> <p>identify the different forms water can take (e.g. cloud, rain) as it moves through the water cycle.</p> <p>discuss different methods of conserving water in the home.</p>	<p>Explain different methods of conserving water in the home.</p>

PRIMARY FIVE

SECTION 3 SYSTEMS

General Objectives: The pupil will

1. recognise that a system is a whole consisting of parts that work together to perform a function.
2. be aware that there are systems in nature.
3. be aware of the various organ systems in the human body.
4. appreciate the various organ systems and their interdependence in carrying out a life function.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 THE HUMAN BODY SYSTEMS	The pupil will be able to:		Let pupils:	
	3.1.1 identify some organ systems in the human body.	Organ systems in Humans: Respiratory, reproductive Circulatory, Digestive, Nervous, Skeletal, and Excretory.	use charts/models to discuss the various organ systems in the human body. watch a digitized/video clip on the structure and functions of the various organ systems in the human. <i>Note: detail treatment of functions of parts not required</i> Project <i>In groups model one each of the various organ systems of humans using a collage. Each group makes a presentation to the class.</i>	Give one function each of the human body systems
	3.1.2 name the organs of an organ system in humans.	Names of the organs in the organ systems of respiratory, circulatory and digestive.	discuss names of the organs that make up the organ systems of humans. Pupils to watch digitized/ video clip of the structure and operations of the various organ systems in humans.	Explain how the respiratory and circulatory systems depend on each other to carry out a life function.
3.1.3 explain the interdependence of the organ systems in carrying out a life function	Interdependence of the organ systems	discuss the interdependence of the different organ systems in carrying out a life function.		

PRIMARY FIVE

SECTION 4 ENERGY

General Objectives: The pupil will:

1. show understanding that energy has a source, can be transferred and can be transformed into various forms of energy.
2. recognise that the sun is a major source of energy on earth
3. show understanding of how energy is converted from one form to another
4. show understanding that matter can change from one form to another.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 FORMS OF ENERGY	<p>The pupil will be able to:</p> <p>4.1.1 explain the term ‘energy’</p> <p>4.1.2 identify different forms of energy</p> <p>4.1.3 convert energy from one form to another</p>	<p>Meaning of energy : the ability to do work</p> <p>Forms of Energy: Heat, light, electrical, chemical, sound, mechanical, kinetic, potential and solar</p> <p>Converting energy from one form to another</p>	<p>Let pupils:</p> <p>discuss the meaning of the term ‘energy’</p> <p>discuss the different forms of energy and give examples: Heat, light, electrical, chemical, sound, mechanical, kinetic, potential and solar</p> <p>connect a dry cell and a flashlight bulb with a piece of connecting wire to make the bulb light.</p> <p>discuss the different forms of energy involved in this process.</p> <p>state the energy transformations that take place when a flashlight is switched on.</p>	<p>List six different forms of energy.</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 CONVERSION OF ENERGY	The pupil will be able to: 4.2.1 explain how energy is converted from one form to another.	Change of energy from one form to another.	Let pupils: demonstrate various ways of converting one form of energy to another. use a piece of wire to connect a flashlight bulb to two dry cells to make the bulb light.	List as many sources of energy as possible.
	4.2.2 describe ways of conserving energy	Ways of conserving energy	use a piece of wire to connect a door bell to two dry cells and make the bell ring. discuss ways of conserving energy in the home. Compare incandescent and fluorescent light with respect to their energy saving efficiency.	Give five reasons why people get worried when there is no electricity.
UNIT 3 LIGHT	4.3.1 infer that light is a form of energy.	Light as a form of energy	demonstrate that light carries energy.	Describe the changes of energy between a lit flashlight bulb and dry cells.
	4.3.2 identify different sources of light.	Sources of light: - Natural - Artificial	discuss natural and artificial sources light.	
	4.3.3 explain that an object can be seen when it reflect light or when it is itself a source of light.	Reflection of light.	demonstrate reflection of light using mirrors and polished surfaces. Project : <i>Design and make a periscope.</i>	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 4 CHANGE OF STATE OF MATTER	The pupil will be able to:		Let pupils	Identify the rainbow colours.
	4.3.4 demonstrate that light is made up of different colours	Colours that make up white light	investigate that light can be broken up into many different colours. mention names of colours that form white light.	
	4.3.5 describe the rainbow colours.	Rainbow	discuss formation of rainbow.	
	4.3.6 Show the relationship between light and materials.	Transparent, translucent and opaque materials.	Sort and group materials according to the degree to which they allow light to pass through using activities. Project: <i>Design and make a light shade using suitable materials.</i>	
	4.4.1 explain the term 'matter'	Meaning of matter.	Brainstorm to come out with the meaning of matter. Give examples of matter	
	4.4.2 describe the three states of matter.	States of matter	Discuss the three states of matter in terms of shape , volume and ability to flow.	
	4.4.3 investigate how matter changes from one state to another.	Change of state of matter. <i>Melting:</i> solid-liquid <i>Evaporation/boiling:</i> Liquid - gas <i>Condensation:</i> Gas-liquid	investigate the effect of heat gain or loss on the states of matter. Heat ice until it melts and changes into water. Heat the water until it boils and changes into steam. Place a cold glass across the path of escaping vapour. Record what happens.	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 5 BASIC ELECTRONICS	<p>The pupil will be able to:</p> <p>4.5.1 Describe how a P-N-junction semiconductor diode behaves in an electronic circuit.</p>	<p><i>Freezing</i>: Liquid –solid</p> <p><i>Sublimation</i>: Solid-gas</p> <p>P-N junction semiconductor diodes forward bias and reverse bias in a d.c circuit.</p> <p>Diode in an a.c circuit</p>	<p>Let pupils:</p> <p>Place water in a freezer for a day and record what happens.</p> <p>Place some ammonium chloride in a beaker and cover with a glass. Warm the ammonium chloride in the beaker and record what happens.</p> <p>Connect a d.c circuit comprising a battery, switch, a resistor, a diode and an LED in series. Keep the switch contacts open.</p> <ul style="list-style-type: none"> -close the switch and observe the effect. -reverse the diode connection and observe the effect on the LED. <p>Construct an a.c circuit comprising of a 12V a.c source, a switch, a parallel combination of two resistors in series with a third resistor connected to an LED across which a reverse biased diode is connected. Observe the behaviour of the LED when the circuit is switched on</p> <ul style="list-style-type: none"> -reverse diode connection and observe the effects 	<p>Explain the function of the diode in an a.c electric circuit.</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 MIXTURES	The pupil will be able to:		The pupil will:	
	5.2.1 demonstrate the formation of mixtures	Mixtures Solid-solid Solid-liquid Liquid-liquid Liquid-gas Gas-gas	prepare mixtures through the following activities: Put iron filings in sand and stir. Pour powdered chalk in water, stir and allow to stand Add common salt to water and stir Add oil to water and shake and allow to stand Open a bottle of coca cola and observe what happens Spray some perfume into a handkerchief and place it on the teacher's table. Burn some leaves/paper and observe the smoke rising and relate it to the kitchen/ car exhaust.	Describe how you separate the following mixtures: i. Sugar and water ii. Beans and chaff iii. Palm oil and water
	5.2.2 identify appropriate method for separating a particular mixture	Methods of separation of mixtures: Filtration, Evaporation, Magnetization, Decantation, Winnowing, Distillation	demonstrate how to separate iron filing from sand demonstrate how to separate salt from water. demonstrate how to separate chalk from water. explore other methods of separating mixtures.	
5.2.3 list some uses of mixtures in industry and in everyday life	Application of the formation and separation of mixtures.	discuss the importance of the formation and the separation of mixtures in everyday life.		

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 3 WATER RELATED DISEASES	The pupil will be able to:		Let pupils:	
	5.2.1 state the symptoms of some water related diseases	Water related Diseases e.g. Malaria Cholera Guinea worm	discuss the various water related diseases using a chart. Teacher to invite a health worker to give a talk on water related diseases. watch digitized/video clip on some causes and effect of water related diseases.	State some water related diseases.
	5.2.2 describe the prevention of some water related diseases.	Prevention of water related diseases: Malaria Cholera Guinea worm	write a poster educating pupils on Malaria, Cholera and Guinea worm prevention.	Describe how you will control the spread of malaria in your community
	UNIT 4 HIV/AIDS	5.3.1 state the causes of HIV/AIDS	Causes of HIV/AIDS	Resource person talks to the pupils on HIV/AIDS.
5.3.2 describe the effects of HIV/AIDS		Effects of HIV/AIDS	write messages on HIV/AIDS educating people on the causes, effects and prevention of the diseases.	
5.3.3 state some preventive measures for HIV/AIDS		Prevention of HIV/AIDS	watch video clips on HIV/AIDS and discuss their observation.	
5.3.4 explain why it is safe to live freely with HIV/AIDS patients.		People living with HIV/AIDS	invite a health worker talk on how to live with people with HIV/AIDS	

PRIMARY SIX

SECTION 1 DIVERSITY OF MATTER

General Objectives: The pupil will:

1. recognise the variety of living and non-living things and their interconnectedness.
2. distinguish a fruit from a seed and fleshy fruit from dry fruits.
3. recognize the uses of fruits and seeds in the home and industry
4. recognize the importance of dispersal of seeds and fruits.
5. recognize the conditions necessary for germinations
6. be aware of the composition, properties and uses of air.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 FRUITS AND SEEDS	<p>The pupil will be able to:</p> <p>1.1.1 group fruits into fleshy and dry.</p> <p>1.1.2 identify the parts of a fruit.</p> <p>1.1.3 identify parts of a seed.</p> <p>1.1.4 distinguish a fruit from a seed.</p>	<p>Types of fruits</p> <p>Parts of a fruit</p> <p>Parts of a seed.</p> <p>Physical appearance of fruits and seeds Fruits have two scars for attachment</p> <p>Seeds have one scar for attachment</p>	<p>Let pupils</p> <p>classify fruits into fleshy and dry.</p> <p>cut longitudinal and transverse sections of a fleshy fruit. Draw and label the parts.</p> <p>cut longitudinal and transverse sections of a maize and cowpea. Draw and label. State two differences between the two seeds.</p> <p><u>Project</u></p> <ul style="list-style-type: none"> - mount on a cardboard variety of fruits - explore their domestic and industrial uses and record them. - Name the fruits and the area where they are commonly located. 	<p>Name two examples each of fleshy and dry fruits</p> <p>Make a labelled diagram of transverse section of a named fleshy fruit.</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 AIR	The pupil will be able to:		Let pupils:	
	1.1.5 state the conditions necessary for germination	Conditions necessary for a seed to germinate: Air, moisture, suitable temperature, viability of seed	Brainstorm to bring out the conditions necessary for a seed to germination. <u>Project</u> : <i>Explore the conditions necessary for germination to take place.</i> <i>Write a report on your findings.</i>	What conditions are necessary for a viable seed to germinate?
	1.1.6 identify ways by which fruits and seeds are dispersed.	Methods of dispersal of fruits and seeds: Wind, Water, Animals, Explosive mechanism	assemble various fruits and seeds and discuss how they are dispersed. pupils to watch digitized content/video on dispersal of seeds.	Describe three ways by which fruits and seeds are dispersal o
	1.1.7 state the advantages of dispersal.	Advantages of seed and fruit dispersal.	brainstorm on the advantages of dispersal to fruits and seeds..	What are the advantage of dispersal of fruits and seeds to plants
	1.1.8 identify the domestic and industrial uses of fruits and seeds	Domestic and industrial uses of fruits and seeds	build an album indicating industrial uses of fruits and seeds and explore some of the wild fruit and seeds that can have industrial uses.	
	1.2.1 state the composition of air	Composition of air: Nitrogen 78.0% Oxygen 21.0% Carbon (II) oxide 0.03% Rare gases 1.0% Water vapour Variable Dust particles Variable	light a piece of candle and place it in a bowl. pour water into the bowl, until the level gets to about one-third of the height of the candle. cover the lighted candle with a transparent container. discuss their observation. increase the number of candles to two and perform the same experiment. record and discuss their observation.	Draw a setup to show that air contains oxygen. What is the composition of air?
1.2.2 state the properties of air	Properties of air. Air has mass and occupies space.	turn a bottle upside-down and dip it completely into water. turn the mouth of the bottle up quickly and discuss their observation.	State two main properties of air.	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
	<p>The pupil will be able to:</p> <p>1.2.3 show that air exerts pressure</p> <p>1.2.4 list some uses of air.</p>	<p>Air exerts pressure.</p> <p>Uses of air: Breathing, sailing, Hoovering Winnowing, Burning, Ventilation etc.</p>	<p>Let pupils</p> <p>hold a closed umbrella behind them. run against the direction of the wind. now open the umbrella against the direction of the wind. Compare the effects of air in both states.</p> <p>Light two candle sticks and place them on a table. Cover one candle with a transparent container. Observe and discuss what happens.</p> <p>Brainstorm on the uses of air.</p>	<p>What are the uses of air to humans in everyday life?</p>

PRIMARY SIX

SECTION 2 CYCLES

General Objectives: The pupil will:

1. recognize that there are repeated patterns of change in nature and understand how these patterns arise.
2. show understanding of the life cycle of a mosquito and how to control it.
3. show understanding of the life cycle of okra and maize.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 LIFE CYCLE OF OKRA AND MAIZE PLANTS	The pupil will be able to: 2.1.1 demonstrate the life cycle of okra or maize plant.	Life cycle of okra or maize plant.	Let pupils plant viable maize or okra seeds. care for it until it bears fruits. observe and record the changes that take place until other viable seeds are produced.	Describe the life cycle of named plant you have studied.
UNIT 2 LIFE CYCLE OF A MOSQUITO	2.2.1 demonstrate the life cycle of a mosquito	Life cycle of a mosquito	place uncovered clean water at a suitable place, preferably in the classroom. Observe how mosquitoes breed. observe the setup and record what you see daily until a mosquito comes out. <i>Note: Use a hand lens to detect the presence of the eggs of mosquito.</i> When the larvae emerge, cover the container with a piece of net(mosquito net). explore ways of controlling mosquitoes by breaking the life cycle.	Use a flow chart to show the life cycle of a mosquito. Mention two ways of controlling mosquitoes.

PRIMARY SIX

SECTION 3 SYSTEMS

General Objectives: The pupil will:

1. recognize that a system is a whole consisting of parts that work together to perform a function.
2. identify the different organs that form the digestive system.
3. acquire skills in the design and making of simple electrical devices
4. recognize that a current can only flow through a closed circuit.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 THE DIGESTIVE SYSTEM OF HUMANS	The pupil will be able to:		Let pupils	
	3.1.1 identify the different organs that form the digestive system.	Main organs of the digestive system: Mouth, Stomach, Small intestine, Large intestine	With the aid of chart/model identify the main organs of the digestive system.	Draw or model and label the main organs of the digestive system.
3.1.2 describe the functions of the organs of the digestive system.	Function of the various parts of digestive system.	Discuss the functions of the various parts of digestive system. Discuss end products of digestion of the different types of food. Note: <i>names of enzymes not required</i>		
UNIT 2 SIMPLE ELECTRICAL CIRCUIT	3.2.1 construct simple electric circuit to operate a motor.	Circuit to operate an electric motor	Connect a motor to an electric circuit. Use the motor to power a miniature device e.g. fan, corn mill. Use a piece of wire, a dry cell and a torchlight bulb to produce light. Draw your arrangement and discuss. Add one more dry cell and record your observation.	Draw a simple electrical circuit and label the parts
	3.2.2 Construct a simple electric circuit to produce a magnet.	Electromagnets.	Design and make a solenoid and use it to make a magnet.	Describe how you will use an electric current to produce a magnet.

PRIMARY SIX

SECTION 4 ENERGY

General Objectives: The pupil will:

1. recognise that energy has a source, can be transferred and can be transformed into various forms of energy.
2. recognize the importance of respiration as one of the sources of energy to living things
3. be aware of the sources and effects of heat on loss or gain in daily life.
4. acquire skills to measure temperature of objects and explain types of heat transfer.
5. show understanding of the operations of capacitors and in inductors in electronic circuits.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 RESPIRATION	The pupil will be able to: 4.1.1 explain the term respiration.	Respiration	Let pupils brainstorm to come out with the meaning of respiration.	How is energy obtained from the food we eat.
	4.1.2 state the importance of respiration	Importance of respiration	discuss the importance of respiration in terms of the energy it gives to the human body. compare the rate of respiration in the following activities: sitting down and running.	
UNIT 2 HEAT	4.2.1 explain the term heat	Meaning of heat	brainstorm to bring out the meaning of heat	Name three sources of heat
	4.2.2 list some common sources of heat	Sources of heat	brainstorm to bring out some common sources of heat	Explain why wet clothes dry up when ironed.
	4.2.3 list some effects of heat gain/lost in daily life..	Effects of heat loss or gain : Expansion, evaporation, contraction, condensation, water cycle etc.	heat cubes of ice, candle, solidified shea butter and palm oil and discuss their observation heat water until it boils and discuss their observation	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 HEAT (Cont)	The pupil will be able to:		Let pupils: wet a piece of cloth/handkerchief and leave it in the sun. pupils discuss their observation. carry out the ball-and-ring experiment and any appropriate experiment e.g. bi-metallic strip discuss the effects of expansion and contraction on materials.	
	4.2.4 state the meaning of temperature	Meaning of temperature	brainstorm to come out with meaning of temperature.	
	4.2.5 measure the temperature of objects.	Measurement of temperature	in groups, measure body temperature of members. plot a graph of temperature against names of members in the group heat water and measure temperature at regular intervals until it boils	
	4.2.6 Explain the relationship between temperature and heat.	Relationship between temperature and heat.	discuss the relationship that exists between heat and temperature, e.g. increase in temperature means gain of heat.	
	4.2.7 explain types of heat transfer.	Types of heat transfer: Conduction	discuss types of heat transfer. place drops of candle wax intervals of 6cm on a long metal rod (cutlass) place the metal rod horizontally with one end in a source of heat. keep the metal rod in that position. observe and discuss what happens. discuss examples of good and bad conductors and some of their uses.	Explain how heat is transferred by conduction, convection and radiation

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 3 ELECTRICAL CIRCUIT	The pupil will be able to:		Let pupils:	State the importance of a battery, switch and connecting wire in an electrical circuit.
		Convection	cut pieces of paper and place them in a transparent container (beaker). pour water into the container and heat content until it boils. Discuss their observation.	
		Radiation	brainstorm on how heat gets to someone standing/sitting by lighted fire/coal pot.	
	4.3.1	list the components and functions of a simple electrical circuit.	Components of electrical circuit: Dry cell/battery Switch Bulb/lamp Connecting wire	
4.3.2	construct simple circuit from circuit diagrams	Constructing simple circuits from circuit diagrams	construct a simple electrical circuit from circuit diagrams involving bulbs and cells in series and in parallel. investigate the brightness of the bulbs based on number of cells and bulbs.	
4.3.3	identify electrical conductors and insulators	Electrical conductors and insulators	discuss some examples of electrical conductors and insulators.	
			<u>Project</u> <i>Construct a simple electrical circuit involving a battery, a switch, and motor. Use the motor to power a miniature device like fan/ corn mill.</i>	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 4 BASIC ELECTRONIC CIRCUIT	The pupil will be able to: 4.4.1 investigate the operation of capacitor and inductor in parallel and series electronic circuit	Capacitor and inductor in parallel and series dc circuits.	Let pupils: construct a circuit comprising a switch, an inductor (L), capacitor(C) a diode and an LED. connect the inductor and capacitor in parallel and the LED in series. Connect a battery and switch on. Observe effects on the LED for five minutes. Switch off and observe the effects replace the parallel arrangement of the capacitor and inductor with the capacitor and inductor in series. Switch on, after five minutes switch off. Observe the effects on the LED replace the battery with 12V a.c source and observe the effects for both series and parallel arrangements. <u>Project</u> <i>Pupils to design a circuit using combinations of inductor and capacitor to produce a detector for locating metals</i>	Explain the difference between an electronic circuit and an electric circuit. You are given a battery, switch, an LED and connecting wire. Draw a circuit diagram to show how these components are connected.

PRIMARY SIX

SECTION 5 INTERACTIONS OF MATTER

General Objectives: The pupil will:

1. appreciate that interaction between and within matter helps humans to better understand the environment and their role in it.
2. be aware that food processing and preservation as a method of keeping food for lean seasons
3. appreciate causes and signs of food poisoning.
4. develop positive attitude towards the prevention of flooding.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 FOOD PROCESSING AND PRESERVATION	<p>The pupil will be able to:</p> <p>5.1.1 identify foods that are processed for preservation in their community.</p> <p>5.1.2 explain food preservation and give reasons for preserving them.</p>	<p>Food Processing and Preservation</p> <p>Methods of food preservation: drying, smoking salting, frying, canning etc.</p>	<p>Let pupils:</p> <p>demonstrate how the identified foods are processed and preserved.</p> <p>explore new ways of processing and preserving those foods identified</p> <p>discuss food preservation. discuss why food should be preserved. demonstrate any three methods of food preservation.</p> <p><u>Note:</u> <i>food additives and preservatives should be used with care.</i></p>	<p>Describe how a named food substance is preserved in your community</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 FOOD POISONING	The pupil will be able to: 5.2.1 identify causes of food poisoning 5.2.2 describe signs of food poisoning	Causes of food poisoning Signs of food poisoning: Vomiting, diarrhea	Let pupils: bring expired preserved food/badly preserved foods which have gone mouldy for pupil to observe. discuss common signs of food poisoning.	How would you identify an expired food product? List three signs of food poisoning
UNIT 3 NATURAL DISASTER - FLOODING	5.3.1 identify causes of flooding. 5.3.2 List some effects of flooding.	Causes of flooding. Effects of flooding	discuss the causes of flooding. collect pictures, video clips on flooding and watch them. list some of the effects flooding. talk about their experiences of flooding in their communities.	What causes flooding in some parts of Ghana during rainy season