

REPUBLIC OF GHANA
MINISTRY OF EDUCATION, SCIENCE AND SPORTS



Republic of Ghana

TEACHING SYLLABUS FOR NATURAL SCIENCE
(PRIMARY 1 – 3)

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TEACHING SYLLABUS FOR LOWER PRIMARY

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:

1. develop the spirit of curiosity, creativity and critical thinking.
2. develop skills, habits of mind and attitudes necessary for scientific inquiry.
3. develop the spirit of curiosity for investigating and understanding their environment
4. communicate scientific ideas effectively
5. use scientific concepts for explaining their own lives and the world around them.
6. live a healthy quality life.
7. treat all resources of the world with humane and responsible attitude.
8. show concern and understanding of the interdependence of all living things and the Earth on which they live
9. 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

	PRIMARY 1	PRIMARY 2	PRIMARY 3
DIVERSITY OF MATTER	Unit 1: Living and non-living things Unit 2: Measurement (length, mass, volume and time)	Unit 1: Living things(Plants & Animals) Unit 2: Water Unit 3: Air Unit 4: Rocks Unit 5: Measurement	Unit 1: Soil Unit 2: Feeding in Plants Unit 3: Feeding in Animals Unit 4: States of Matter Unit 5: Measurement of Time.
CYCLES	Unit 1: Sun and Earth Unit 2: Day and Night	Unit 1: Weather conditions	Unit 1: Seasons
SYSTEMS	Unit 1: Simple Electronic components	Unit 1: The Human Body Unit 2: Parts of a Plant	Unit 1: Sense organs
ENERGY	Unit 1: Sunlight Unit 2: Food	Unit 1: Hot and Cold Unit 2: Sound	Unit 1: Waves Unit 2: Building Simple Electronic circuit
INTERACTIONS OF MATTER	Unit 1: Personal Hygiene Unit 2: Simple machines	Unit 1: Personal Hygiene Unit 2: Sanitation Unit 3: Simple machines(Pulleys & Inclined planes) Unit 4: Simple Electronic circuit	Unit 1: Personal Hygiene Unit 2: Water pollution Unit 3: Water purification

TIME ALLOCATION

The suggested time allocation for Natural Science for Primary 1-3 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 natural 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 situations in their environment to enable them make their own observations and discoveries and record them. Teachers should help pupils to learn to observe, compare, classify, analyze, look for patterns 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.

In Natural Science (Primary 1-3), the three profile dimensions that have been specified for teaching, learning and testing are:

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”. Primary 1 test paper could contain 5-10 items; Primary 2, 10 items, and Primary 3, about thirty 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 1: 5-10 items for 30-45 minutes depending on the number of items
- Primary 2: 10-20 items for 30-45 minutes depending on the number of items
- Primary 3: 30 items for 45 minutes

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 labelled 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 marking 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 marked out of 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 making 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.

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.

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 gra

PRIMARY ONE

SECTION 1

DIVERSITY OF MATTER

General Objectives : The pupil will:

1. recognise the great variety of living and non-living things and their interconnectedness in nature.
2. show awareness that materials as well as organisms can be grouped based on their properties or characteristics
3. classify living things into broad groups according to common observable characteristic based on similarities and differences.
4. recognise that measurement is very important in the study of science

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 LIVING AND NON-LIVING THINGS	The pupils will be able to: 1.1.1 group materials into living and non-living things 1.1.2 differentiate between things that are living and things that are not living 1.1.3 group living things into plants and animals 1.1.4 describe some characteristics of plants	Living and non-Living things Differences between living and non-living things. Plants and Animals Characteristics of plants: - Size (tall, short, small, big) - colour of leaves.	Let pupils: go round the school compound (<i>Nature Walk</i>) and collect different materials and bring to class. group materials into living and non-living things <i>Note: Real objects or cut-out pictures can be used for the grouping.</i> explore the differences between living and non-living things. sort out living things into plants and animals. collect plants of different sizes and colour from the surroundings or home and bring to school. group them according to sizes(tall, short, small, big) and colour of leaves	Sort pictures of the following into living and non-living things: Insects, lizard, toad, pebbles, beads, glass, plastic cups and tree List two differences between plants and animals.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 (CONTD) LIVING AND NON-LIVING THINGS	The pupils will be able to: 1.1.5 describe some characteristics of animals 1.1.6 mention some uses of plants 1.1.7 mention some uses of animals 1.1.8 draw or model some plants and animals 1.1.9 state some use of non-living things	Characteristics of animals: - Size (small, big) - colour of animals - movement(walking, flying, swimming) Uses of plants - food - fence - decoration Uses of animals Food, transportation and pet. Use of non-living things	Let pupils: use chart, pictures and toys to group animals according to their sizes, colour and movement. discuss some uses of plants discuss uses of animals draw, model or trace some plants and animals using suitable materials. explore the uses of some non-living things: e.g. shoe, pencil, bag, wall, chalk, stone etc.	Name five local plants and show their uses in your locality. How can you identify an animals Explain how are living things are different from non living things?
UNIT 2 MEASUREMENT	1.2.1 measure and compare length of objects 1.2.2 measure and compare mass of objects	Measuring Length Measuring Mass	measure distances or lengths using their feet and span. determine the heaviness or lightness of different sizes of the same object. determine the heaviness or lightness of the same size of different objects such as balls, oranges, stones, magnets etc show that big size does not necessary mean heavier mass.	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 MEASUREMENT (cont.)	The pupil will be able to: 1.2.3 estimate volume of substances using the terms 'more' or 'less' 1.2.4 tell the time on an analogue or digital clocks.	Estimate volume Telling the time.	Let pupils: demonstrate that different sizes of containers can hold different volume of materials (water and sand) demonstrate that the same volume of materials (water, sand, oil etc.) occupies the same space in containers of different sizes. Teacher guides pupils to develop awareness of the passage of time or time taken by events e.g. sunrise, sunset, breakfast time, school going time etc.	Measure the length of the following materials: a stick a strip of paper a leaf.

PRIMARY ONE

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 awareness of the cyclic nature of day and night.
3. recognise that the sun is the driving force behind many cyclic events and processes in nature.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 SUN AND EARTH	<p>The pupil will be able to:</p> <p>2.1.1 describe the presence of the Sun, Moon and Stars in the sky.</p> <p>2.1.2 describe the changes in length and position (direction) of shadows from morning to midday to evening.</p> <p>2.1.3 state that the Earth is round like a football</p>	<p>Objects in the sky:</p> <ul style="list-style-type: none"> - Sun, - Moon - Stars <p>Apparent movement of the Sun in the sky.</p> <p>Shape of the Earth</p>	<p>Let pupils:</p> <p>observe and describe the presence of the Sun, Moon and Stars in the sky</p> <p>infer that there are more Stars in the sky than anyone can easily count.</p> <p>describe the distribution and brightness of stars in the sky</p> <p>observe and tell the position of the Sun in the morning, afternoon and in the evening.</p> <p>demonstrate how the Sun appears to move across the sky from morning to evening.</p> <p><i>Note: pupils should not look at the Sun directly</i></p> <p>observe the globe and relate it to the shape of earth.</p>	<p>Mention names of three objects found in the sky.</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 DAY AND NIGHT	<p>The pupil will be able to:</p> <p>2.2.1 demonstrate that the sun does not move but the Earth turns round.</p> <p>2.2.2 demonstrate day and night.</p> <p>2.2.3 explain how day and night influence human activities.</p>	<p>The Sun is at a fixed position. The Earth turns round.</p> <p>Day and Night</p> <p>Effect of day and night cycle on human activities.</p>	<p>Let pupils: go outside to observe the horizon and relate it to the roundness of the earth.</p> <p>use the globe to demonstrate that the earth turns round</p> <p>use a fixed light preferably a bulb (flashlight) to demonstrate that the sun does not move.</p> <p>use the globe to demonstrate that the earth turns round.</p> <p>use the globe and a fixed source of light to demonstrate day and night.</p> <p>discuss the occurrence where some places have day light on earth while others have night.</p> <p>discuss how day and night affect human activities.</p>	<p>What will happen when sunlight is blocked by dark clouds</p> <p>Why do people at some places receive day light while others are in darkness</p>

PRIMARY ONE

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. recognise that an electric circuit consisting of an energy source and other circuit components forms an electronic system

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 SIMPLE ELECTRONIC COMPONENTS	The pupil will be able to: 4.1.1 tell what makes electronic gadgets (toys) work.	Operations of electronic toys	Let pupils: gather different electronic toys. operate the electronic toys. group the toys according how they work: <ul style="list-style-type: none">- movement- making sound- producing light- playing music etc. find out what makes the toys work. draw their favorite electronic toy. <i>Note: encourage pupils to realise that a battery is an important electronic component.</i>	Tell what a battery does in electronic toys.

PRIMARY ONE

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.
2. recognise that the Sun is the primary source of light energy
3. recognise that animals obtain their food by eating plants and other animals.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 SUNLIGHT	The pupil will be able to: 4.1.1 state the importance of sunlight 4.1.2 show that light from the sun is a basic need of most plants.	Uses of Sunlight Sunlight as a basic need of most plants.	Let pupils: demonstrate that sunlight helps us to see clearly. demonstrates that sunlight helps things to dry. demonstrates that sunlight can make things warm. demonstrates that sunlight helps plants to grow well.	List three uses of sunlight. What happens to smaller plants that grow in shady areas under bigger trees?
UNIT 2 FOOD	4.2.1 state uses of food.	Uses of food.	discuss the uses of food to humans. mention food they have eaten for the past three days. explain what they get from eating food.	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 FOOD (Cont)	<p>The pupil will be able to:</p> <p>4.2.2 classify foods according to how the human body uses them.</p> <p>4.2.3 identify energy given food</p> <p>4.2.4 identify food that helps the body to grow</p> <p>4.2.5 identify food that protects the body from diseases</p>	<p>Kinds of Food:</p> <ul style="list-style-type: none"> • Energy given food • Food for growth • Protective food 	<p>Let pupils:</p> <p>bring rice, beans, maize, fish, meat, vegetable oil, orange, tomato, millet, cassava, cocoyam, yam, pepper, potato, salt, milk, pawpaw, pineapple, banana, garden eggs, cooked eggs etc. to school.</p> <p>Group food items brought to school into:</p> <p>(i). food that gives energy to the body</p> <p>(ii). food that promotes growth.</p> <p>(iii). food that protects the body from diseases</p> <p>Make an exhibition of the three kinds of food on cardboards</p> <p>Draw as many food items as they can</p> <p>Teacher to invite a health worker or nutritionist to talk about healthy diet for children</p>	<p>Why do we eat?</p> <p>Name the type of food that gives the following</p> <ol style="list-style-type: none"> 1. Energy 2. Make us grow 3. Protect our bodies against disease.

PRIMARY ONE

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. develop positive attitude towards personal hygiene and environmental sanitation
3. appreciate the role of machines as a tool for making work easy and faster.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 PERSONAL HYGIENE	The pupil will be able to: 5.1.1 explain the need for hand washing 5.1.2 demonstrate the proper way to wash the hands. 5.1.3 explain the need for cleaning the teeth. 5.1.4 demonstrate the proper way to clean the teeth. 5.1.5 explain the need for bathing.	Hand washing Showing the proper way of washing the hands. Importance of cleaning the teeth. Bathing the body.	Teacher samples some pupils to demonstrate how they wash their hands. Pupils comment on the demonstration Teacher demonstrates the right way of hand washing. Demonstrate the right way of washing hands. Note: <i>Always wash with soap and running water.</i> Discuss the need for brushing the teeth. Demonstrate the proper way to brush the teeth. Discuss the need for bathing.	Why do you wash your hands before you eat? Describe how to wash hands.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 PERSONAL HYGIENE (cont)	The pupil will be able to:		Let pupils:	
	5.1.6 demonstrate the proper way of bathing the body.	Proper ways of bathing the body.	demonstrate the proper way of bathing the body using dolls.	Name the parts of the body that must be clean. Why do you wash your cloths?
	5.1.7 explain the need for keeping the finger nails short and clean.	Keeping the finger nails short and clean.	demonstrate ways for keeping the finger nails short and clean.	
	5.1.8 demonstrate the proper way to keep the finger nails clean.		demonstrate the proper way to keep the finger nails clean.	
	5.1.9 explain the need for taking good care of the hair	Taking good care of the hair	discuss the need for taking good care of the hair.	
	5.1.10 demonstrate the proper ways of taking good care of the hair.		demonstrate the proper way for taking good care of the hair.	
5.1.11 explain the need for washing clothes and underwear.	Care for clothing.	discuss the need for washing clothes and underwear		
UNIT 2 SIMPLE MACHINES	5.2.1 name some simple devices used for making work easier	Simple devices for doing work: Bottle opener, scissors, pincers, crowbar, screw driver, pliers, hammer, sheers wheel barrow, spanner and knife.	names some simple devices that make work easy to do.	What will you use to open a bottle of soft drink easily?
	5.2.2 use appropriate machines to do specific 'work'	Uses of simple machines	choose appropriate simple machines and practise how to use them in the following activities: - Opening a tightened cork on a bottle. - Cutting a piece of cloth.	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 SIMPLE MACHINES (cont)	<p>The pupil will be able to:</p> <p>5.2.3 infer that devices that help to make work easier are called machines.</p> <p>5.2.4 develop skills for using simple machines</p>	<p>Machines</p> <p>Skills for using simple machines</p>	<p>Let pupils:</p> <ul style="list-style-type: none"> - Removal of a nail stuck in wood. - Removal of a screw stuck in wood. - Loosening a tight bolt. <p>attempt to perform the above activities using bare hands</p> <p>compare their experiences to when using the tools and when using their bare hands.</p> <p>discuss and bring out the meaning of the term 'machine'</p> <p>Teacher assists pupils to handle and use tools efficiently as they go through the above activities</p> <p>Note: <i>Teacher should design more activities involving the use of simple machines for pupils to practice.</i></p>	<p>Why do we use machines to work?</p>

PRIMARY TWO

SECTION 1

DIVERSITY OF MATTER

General Objectives: The pupil will:

1. Recognise the great variety of living and non-living things and their interconnectedness in nature.
2. Recognize reproduction in living things as the basis for the sustainability of life
3. Be aware that water is a life sustaining substance

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 PLANTS	<p>The pupil will be able to:</p> <p>1.1.1 describe various kinds of plants.</p> <p>1.1.2 mention ways by which plants make their babies (young ones).</p> <p>1.1.3 demonstrate ways by which baby plants(young) are produced from seeds.</p>	<p>Kinds of Plants.</p> <p>Reproduction in Plants</p> <p>Making baby(young) plants from seeds.</p>	<p>Let pupils:</p> <p>describe different kinds of plants e.g. erect, creeping, climbing, plants with broad leaves, narrow leaves, those that have flowers and those that do not have flowers.</p> <p>bring plant materials to school (seeds, cassava sticks, sugar cane and ginger)</p> <p>examine the planting materials and guess the part that grows into a young plant.</p> <p>draw some of the plant materials.</p> <p>Plant/sow seeds in transparent containers filled with wet cotton wool/saw dust/ soil and observe what happens daily.</p> <p>Watch a video/digitized clip on seed germination and talk about it.</p>	<p>List two ways by which plants produce their young ones.</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 ANIMALS	The pupil will be able to: 1.2.1 group animals into birds, insects, fish, reptiles and mammals. 1.2.2 group animals according where they live. 1.2.3 distinguish between animals in terms of their movement. 1.2.4 group animals into how they produce their young ones.	Grouping of animals into birds, insects, fish, reptiles and mammals. Living places (habitats) of animals: Air, water and land. Movement of animals Walking, swimming, flying. Reproduction in animals: - Laying of eggs - Giving birth to young ones	Let pupils: go on a nature walk to observe the different kinds of animals found in the community. group animals into birds, insects, fish, reptiles and mammals. Draw a fish, butterfly, bird and snake. match different animals to their living places (air, water and land). draw to show an animal at its living place. demonstrate how some animals move e.g. Walking, swimming, flying etc. give one example each of an animal to match with the different types of movement. watch a digitized content/video tape on how different animals move. Visit a fish pond to watch how fish moves. observe and discuss a wall chart showing animals and their babies(young ones). identify and mention names of animals that make babies by birth. identify and mention names of animals that make babies by laying eggs. match eggs to animals that produced them. <i>Note: Teacher should build stock of eggs from different animals.</i> Draw an egg. sort out animals that produce babies by birth from pictures of different animals.	Name two animals that produce babies by birth.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 3 WATER.	The pupil will be able to: 1.3.1 name some sources of water 1.3.2 state some use of water. 1.3.3 identify good drinking water	Sources of Water Use of water. Qualities of good drinking water: - Tasteless - Free from solid particles, etc	Let pupils: Mention sources of water. Mention some uses of water in the home and school. Discuss qualities of good drinking water.	Where can water be collected for use in your area.
	1.3.4 identify water from other liquids.	Differences between water and other liquids: - Colour - Smell - Taste	Assemble different types of liquids in clean transparent containers. Identify water from other liquids using smell, taste and colour. <i>Note: Pupils should not taste any liquid unless instructed by teacher.</i>	
UNIT 4 AIR	1.4.1 demonstrate the presence of air.	Presence of air	use activities to demonstrate the presence of air. E.g. wave a piece of paper across the face and discuss their observation	
	1.4.2 mention some use of air.	Some uses of air: - Breathing - Burning - Flying etc.	mention some uses of air. E.g. filling balloons, parachuting, pumping car tyres, etc.	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 5 ROCKS	<p>The pupil will be able to:</p> <p>1.5.1 describe types of rocks</p> <p>1.5.2 state some uses of rocks</p>	<p>Types of rocks: Rounded stones, Gravel (small stones with sharp edges), Stones showing layers, Soft stones(stones that make a mark when rubbed on paper)</p> <p>Some uses of rocks: Carving, roofing, decoration, building houses, bridges, roads, dams, ports and harbours, making water closets and sinks.</p> <p>Rocks as a storehouse for water beneath the earth</p>	<p>Let pupils:</p> <p>Collect stones from the surroundings and group them as discussed in the content.</p> <p>discuss uses of rocks.</p> <p>make small rock gardens.</p> <p>use rocks to make patterns. Teacher to show pupils pictures of things made from rocks.</p> <p>pick some stones from the school compound or environment. Make small holes or cavities in the stones and pour some water into them. Keep the stones in a cool place and observe what happens for a day or two.</p>	State two uses of rocks.
UNIT 6 MEASUREMENT OF LENGTH, MASS, VOLUME AND TIME.	<p>1.6.1 measure the length of objects using pace and sticks.</p> <p>1.6.2 measure the mass of his/her body.</p>	<p>Measuring length.</p> <p>Mass as a measure of growth and good health.</p>	<p>measure length of objects using their pace and any convenient material such as sticks.</p> <p>In pairs, pupils mark their heights on a wall in the classroom. Pupils repeat this exercise monthly as a measure of growth. ,</p> <p>measure the mass of their bodies in kilograms (kg) with a sling/bathroom scale and record them. Pupils repeat this process monthly to track the rate at which they grow.</p>	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
	<p>The pupil will be able to:</p> <p>1.6.3 predict the quantity of small containers that will be needed to fill a big container.</p> <p>1.6.4 demonstrate how to determine the volume of his/her fist</p> <p>1.6.5 measure time of events.</p> <p>1.6.6 design and make an analogue clock.</p>	<p>Measuring Volume</p> <p>Measuring Volume of the fist using the displacement method</p> <p>Measuring the time.</p> <p>Making an analogue clock.</p>	<p>Let pupils:</p> <p>Build stock of containers of different sizes. guess the quantity of small containers that will fill a bigger container. measure to find out if their guess is correct.</p> <p>fill a displacement can to the brim and place it in a bowl. Curl the thumb and fingers together to form a fist and insert into the displacement can up to the wrist. measure the volume of water displaced by the fist.</p> <p>repeat the above exercise using the open hand. Compare the two volumes.</p> <p>mention some devices for measuring time. Mention some events which take longer or shorter time. In pairs, pupils tell time from preset analogue and digital clocks. Engage in activities and time them.</p> <p>Pupils to design and make analogue clocks from cardboards.</p>	

PRIMARY TWO

SECTION 2

CYCLES

General Objectives: The pupils will:

1. recognise that there are repeated patterns of change in nature and understand how these patterns arise.
2. recognize that atmospheric conditions vary and can be measured.
3. be aware that rainbow is a natural phenomenon and it shows the colours of light.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 WEATHER CONDITIONS	<p>The pupil will be able to:</p> <p>2.1.1 list conditions that describe the weather.</p> <p>2.1.2 forecast the weather for the day</p> <p>2.1.3 prepare a weather chart for one month.</p>	<p>Conditions that describe the weather: Sunlight, rain, clouds, wind, dust and fog.</p> <p>Weather forecasting.</p> <p>Weather Chart</p>	<p>Let pupils:</p> <p>discuss the conditions that give the weather its appearance in a day.</p> <p>observe the weather conditions and predict what will happen in the day. pupils to report on whether their forecast came true. record data daily for two weeks.</p> <p><u>Project</u> <i>Study the weather conditions daily for two weeks. Record your observation in the form of a weather chart.</i></p> <p>use different colours to mark the different weather conditions: red for sunny, ash for cloudy, blue for rainy, brown for windy</p> <p>plot a block graph of weather condition against Number of times it occurred.</p>	<p>List three weather conditions you will find on a :</p> <p>a. rainy day b. harmattan day</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
	<p>The pupil will be able to:</p> <p>2.1.4 describe the effects of dry and wet seasons on some human activities.</p> <p>2.1.5 name the colours in the rainbow</p> <p>2.1.6 demonstrate the formation of rainbow</p>	<p>Effects of dry and wet seasons on some human activities.</p> <p>Colours in rainbow and their names.</p> <p>Formation of rainbow</p>	<p>Let pupils:</p> <p>discuss the dry and wet seasons on some human activities.</p> <p>discuss and come out with the following:</p> <ul style="list-style-type: none"> - Names of colours in rainbow - Where the colours of rainbow come from. <p>demonstrate different ways of making a rainbow.</p>	<p>What colours form the rainbow?</p> <p>Describe two ways of making a rainbow appear on a wall.</p>

PRIMARY TWO

SECTION 3

SYSTEMS

General Objectives : The pupils will:

1. Recognise that a system is a whole made up of parts that work together to perform a function.
2. Recognise the human body as a system which has different parts to carry out different functions.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 THE HUMAN BODY	The pupil will be able to:		Let pupils:	
	3.1.1 identify the different the parts of the human body.	Parts of the human body: Head, neck, hand, chest, stomach and legs.	identify and name the parts of the human body through games, songs, models and dolls.	Name parts of the body that are in pairs.
	3.1.2 identify the functions of the different parts of the human body.	Functions of the parts of the human body	draw and match the human body parts to their functions. do a miming and tell the parts of the body involved in the activity.	State a function each of the following parts of the body: Neck, head, legs, hand.
UNIT 2 PARTS OF A PLANT	3.1.3 predict what happens when one loses a part of his/her body.	Effect of losing part of the human body	discuss the effect of losing part of the human body.	
	3.2.1 identify leaves, stems and roots of a plant and state their functions	Parts of a plant and their function.	pupils to uproot young (baby) plants from the school compound or surroundings. Pupils observe, identify and give functions of the leaves, stem and roots.	
	3.2.2 draw and label a plant.	Drawing a plant.	draw and label the parts of a plant.	

PRIMARY TWO

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.
2. Be aware of the sources of energy that make things warmer or cooler.
3. Recognise the effects of high sound energy levels on the ear which serves as receiver of sound.
4. Recognise the characteristics of sound energy.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 HOT AND COLD	The pupil will be able to:		Let pupils:	
	4.1.1 differentiate between cold and hot in terms of food, water, the human body and the weather.	Differences between cold and hot in terms of food, water, the human body and the weather. Hot substances: - Melting candle wax - Soup on fire - Steam - Fire Cold substances: - Ice - Ice cream - Snow	use their sense of touch to determine and describe whether the body of a person, weather and samples of food and water is hot or cold. Name substances that are hot or cold.	What will you do to make your food hot? What will you do to make your food cold.
	4.1.2 identify sources of energy that make things warmer or cooler.	Substances that make things cold or hot.	mention names of substances that can make things hot or cold e.g. stove, refrigerator etc.	Use hot or cold to describe the condition in which the following substances can be used. Pressing iron Ice cream Tea
4.1.3 demonstrate ways of keeping liquids and solids hot or cold	Ways of keeping liquids and solids hot or cold	explore ways of keeping liquids and solids hot or cold.		

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 SOUND	The pupil will be able to:		Let pupils:	
	4.1.4 state some effects of hotness or coldness on substances.	Effects of hotness or coldness on substances	put some sachets of water a freezer for a day and discuss what happens.	
	4.1.5 demonstrate that the nature of some substances change when they become hot or cold.	Change of nature of substances	place a container of shea butter in the sun during the day and observe what happens. Pupils to discuss their observations	
	4.2.1 identify sound and their sources of vibration in everyday life.	Sources of Sound: Thunder, school bells/drums, church bells, musical instruments, animals, vehicles, machines, sea waves, water falls, alarm/siren	mime sound produced from different sources discuss sources of sound. group sound as coming from natural or artificial sources.	How would you make the following material produce sound? Bell Drum Guitar Flute
	4.2.2 demonstrate that sound comes from vibrating objects.	Vibrating objects produce sound.	demonstrate ways of producing sound by making a variety objects vibrate, e.g. tins, paper etc. demonstrate how changes in length, tension, and thickness of vibrating objects affect the sound produced	
	4.2.3 interpret sound according to the message it carries.	Sound carries messages of: Warning, danger, emergency, joy, sadness	group sound according to the message they carry.	
4.2.4 explain that sound carries energy and can do work.	Sound carries energy	find out what happens to pieces of light materials e.g. paper when placed near loud speakers producing sound.	Why does a paper placed near a working loud speaker shake?	

PRIMARY TWO

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. develop positive attitude for a healthy living through personal hygiene and environmental cleanliness
3. be aware that machines are essential for productivity and development.
4. recognise that a current can only flow through a closed circuit.
5. recognise that the brightness of an LED in an electronic circuit depends on how much current flow through it.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 SANITATION	<p>The pupil will be able to:</p> <p>5.1.1 explain the need for keeping the compound clean.</p> <p>5.1.2 demonstrate ways of keeping the compound clean.</p> <p>5.1.3 mention diseases associated with unclean toilet facilities.</p>	<p>Keeping the compound clean.</p> <p>Ways of keeping the compound clean. Sweeping Hovering Mopping Cleaning gutters etc.</p> <p>Diseases associated with unclean toilet facilities.</p>	<p>Let pupils:</p> <p>brainstorm on the need to keep the compound clean.</p> <p>pupils practice different ways of keeping their compounds clean.</p> <p>discuss the infections that one could get from visiting unclean toilet facilities.</p>	<p>List two diseases that are associated with unclean toilet facilities</p> <p>How would you keep you compound clean?</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 SIMPLE MACHINES	The pupil will be able to: 5.2.1 demonstrate the uses of inclined plane and pulley to lift load	Inclined planes and pulleys.	Let pupils: lift a load(collection of books) onto the teacher's table with their bare hands. lift the same load onto the teacher's table using inclined plane. Pupils should discuss their experiences. lift a gallon full of water from the ground onto the top of their desks. lift the same load onto the top of their desks using inclined plane. Pupils should compare their experiences. design and construct pulleys. demonstrate how they are used to class. mention some applications of inclined planes in everyday life	Describe how you will construct a pulley.
UNIT 3 SIMPLE ELECTRONIC CIRCUIT	5.3.1 tell the uses of the parts of a simple electronic circuit.	Parts of an electronic circuit - Battery(two or more cells) - Switch - LED(light emitting diode) - Connecting insulated wires	connect up a simple electronic circuit in series using the following components: Battery, Switch, LED(light emitting diode) and Connecting insulated wires close the switch and observe what happens. open the switch and observe what happens add one battery at a time to the same circuit. Tell what happens. Compare what happens with that of the single cell.	

PRIMARY THREE

SECTION 1

DIVERSITY OF MATTER

General Objectives : The pupils will:

1. recognise the great variety of living and non-living things and their interconnectedness in nature.
2. show knowledge of the composition and uses of soil.
3. recognise that plants use sunlight, water and air for making food.
4. recognise that animals obtain their food by eating plants and other animals.
5. acquire positive attitude towards the use of time.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 SOIL	The pupil will be able to: 1.1.1 describe soil. 1.1.2 describe the composition of soil 1.1.3 state uses of soil.	Soil. Composition of soil: Air Water Rock (fine sand, gravel and stones) Dead plant and animal remains Uses of soil	Let pupils: Collect soil into containers and describe it. grind sandstone and find what happens. fill a transparent container with water. Dig some soil from the school compound and pour in it into the water, shake and allow to stand. Observe the different layers of soil. discuss their observation mention some uses of soil. E.g. supporting plant growth, building houses etc.	What conditions do green plants need to produce their food?

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 FEEDING IN PLANTS	The pupil will be able to:		Let pupils:	
	1.2.1 list the materials plants need to prepare their food.	Materials for preparing Plants' food. Water, Air, Sunlight, Green substance in plants.	discuss the materials plants need to prepare their food with the aid of a wall chart	
	1.2.2 state the sources of the materials needed by plants to prepare their food.	Sources of the materials needed by plants to prepare their food.	discuss sources of materials plants need to prepare their food.	
	1.2.3 demonstrate that sunlight is needed in the preparation of plant's food	Sunlight and preparation of plant food	sow two maize/bean seeds in polythene bags/suitable materials. After germination, place one in a cupboard and other at a suitable place where it will have access to sunlight. observe and record any changes in the plants for a week. Discuss their observation.	
UNIT 3 FEEDING IN ANIMALS	1.3.1 list names of animals found in the community.	Animals found in the community.	go on nature walk to observe animals feeding	List three animals you have found in the community around your school
	1.3.2 match animals in the community with the food they eat.	Animals and what they eat.	match animals in the community to the food they eat.	
	1.3.3 describe the methods of feeding in animals.	Mode of feeding in animals: <ul style="list-style-type: none"> • Feeding on plants alone • Feeding on the flesh of animals alone • Feeding on plants and animal flesh 	put into a table form, names of animals and their method of feeding as described in the content.	Match animals, cat, goat, rabbit, chicken and dog with the food they feed on e.g. grass, meat, maize, cassava.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 4 STATES MATTER	<p>The pupil will be able to:</p> <p>1.4.1 state the meaning of matter.</p> <p>1.4.2 state that materials exist in the form of solid, liquid and gas.</p> <p>1.4.3 list some examples of substances that exist separately as solid, liquid or gas.</p> <p>1.4.4 demonstrate that the three forms of substances coexist in many materials.</p>	<p>Meaning of matter</p> <p>States of Matter: Solid, Liquid, Gas</p> <p>Examples of solid, liquid and gas. Solid – stone Liquid –water Gas -air</p> <p>Coexistence of solid, liquid and gas.</p>	<p>Let pupils:</p> <p>Brainstorm to come out with the meaning of matter.</p> <p>go on a nature walk and identify examples of substances in the form of solid, liquid and gas.</p> <p>group materials into solid, liquid and gas</p> <p>list materials with different combinations of solid, liquid and gas. discuss the coexistence of solid, liquid and gas in the human body, soil, coconut, river water.</p>	<p>State the different forms in which matter can exist.</p>
UNIT 5 MEASURE- MENT OF TIME	<p>1.5.1 tell the time on both digital and analogue clocks.</p> <p>1.5.2 design and make a clock using suitable electronic components.</p> <p>1.5.3 time events with stop watches</p>	<p>Reading the time.</p> <p>Making Clocks</p> <p>Timing an event</p>	<p>read time from a digital or analogue clocks</p> <p><u>Project</u> <i>Design and make clocks from suitable materials</i></p> <p>Teacher designs suitable activities for pupils to time.</p>	<p>Which of the following can be used better to measure the time of event: stop watch/clock or ordinary watch/clock</p>

PRIMARY THREE

SECTION 2

CYCLES

General Objectives : The pupils will:

1. Recognise that there are repeated patterns of change in nature and understand how these patterns arise.
2. Understand the cyclic nature of seasons and its effects on human activities.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 SEASONS	<p>The pupils will be able to:</p> <p>2.1.1 describe a season</p> <p>2.1.2 list the seasons in Ghana</p> <p>2.1.3 describe the characteristics associated with Dry and Wet seasons.</p>	<p>Seasons</p> <p>Seasons in Ghana: Wet and Dry seasons</p> <p>Characteristics associated with Dry and Wet seasons.</p>	<p>Let pupils:</p> <p>discuss the meaning of a season</p> <p>using a chart, discuss months of wet and dry seasons of Ghana.</p> <p>discuss the characteristics associated with dry and wet season.</p> <p><u>Note:</u> <i>Teacher to stress on the cyclic nature of seasons</i></p>	<p>What is a season?</p> <p>What is the name of the dry season in Ghana.</p>

PRIMARY THREE

SECTION 3 SYSTEMS

General Objectives : The pupils will:

1. Recognize that a system is a whole made up of parts that work together to perform a function
2. Realise that organisms use their senses to interact with their environment
3. Recognize that the loss of one of the five senses affects an animal's interactions within the environment

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 SENSE ORGANS	<p>The pupil will be able to:</p> <p>3.1.1 name the sense organ for sight</p> <p>3.1.2 demonstrate the dependence of the sense organ for sight on light.</p> <p>3.1.3 state the sense organ for hearing</p> <p>3.1.4 state the sense organ for taste</p> <p>3.1.5 state the sense organ for smell</p>	<p>The Eye: sense organ for sight</p> <p>Light and sight</p> <p>The Ear: sense organ for hearing</p> <p>The Tongue: sense organ for taste</p> <p>The Nose: sense organ for smell</p>	<p>Let pupils:</p> <p>demonstrate an experiment to show the dependence of sight on eye and light. discuss why the blindfolded pupil could not reach the target.</p> <p>demonstrate an experiment to show how important the ear is to hearing.</p> <p>demonstrate an experiment to show how important the tongue is to the sense of taste. discuss the sensation they get when they taste sugar, common salt and lemon juice</p> <p>show how the sense of smell depends on the nose. Teacher to spray some perfume into one corner of the classroom. After a few minutes teacher asks pupils whether they could smell something. Name the organ which helped to smell the perfume. draw the head and show the eye, ear and nose.</p>	<p>Name the sense organs of the human body and their functions.</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 SENSE ORGANS (Cont.)	<p>The pupil will be able to:</p> <p>3.1.6 State the sense organ for feeling/touch</p> <p>3.1.7 Identify the organs that support each other.</p>	<p>The Skin: sense organ for touch/feel</p> <p>Co-functioning of sense organs</p>	<p>Let pupils:</p> <p>demonstrate an experiment to show that the skin is the sense organ for feel and touch.</p> <p>use their sense of touch to identify objects they cannot see. (the feelie game)</p> <p>discuss the sense organ for touch/feel</p> <p>play a game of responding to touch by a cold object, warm object and rough surface.</p> <p>explore the interdependence of the nose and the tongue.</p> <p>demonstrate how the loss of one of the five senses affects human’s interactions with the environment.</p>	

PRIMARY THREE

SECTION 4

ENERGY

General Objectives : The pupils will:

1. Recognise that energy has a source, can be transferred and can be transformed into various forms.
2. Be aware of waves as a basic conveyer of energy for effective communication

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 WAVES	The pupil will be able to: 4.1.1 create waves	Waves	Let pupils: pour some chalk particles on a drum and beat it Observe and describe the patterns made by the vibrating particles hold a rope. Fix one end to a point. Move the end in hand up and down and observe what happens	
	4.1.2 explain that waves carry energy.	Waves and energy	Use experiment to demonstrate that wave carries energy.	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 BUILDING SIMPLE ELECTRONIC CIRCUIT	The pupil will be able to: 4.2.1 use simple electronic circuit to convert electrical energy into light energy or sound energy using a simple electronic circuit	Converting electrical energy into light energy and sound energy, using a simple electronic circuit.	Let pupils Construct a simple electronic circuit comprising two torchlight batteries, a switch, a resistor and a small speaker or earphone in series. Close and open the switch repeatedly and note what happens. Connect an LED in parallel with the earphone. Close and open the switch repeatedly and note what happens. Connect the LED in series with the earphone. Close and open the switch repeatedly and note what happens. <u>Project</u> <i>Construct a simple wet cell using local materials: strips of copper and aluminium plate, lemon juice or salty water.</i> Connect two or more of the wet cells produced in series to turn on an LED.	List components of a wet cell

PRIMARY THREE

SECTION 5

INTERACTIONS OF MATTER

General Objectives : The pupils will:

1. appreciate that interaction between and within matter helps humans to better understand the environment and their role in it.
2. recognize that pollution is a diversion from natural harmony that exist in the environment.
3. acquire skills to reverse the effects of pollution on water bodies and living things.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 PERSONAL HYGIENE.	The pupil will be able to:		Let pupils:	
	5.1.1 state the causes of body odour	Causes of body odour. Some parts of the body that gives odour. Armpit Anus Mouth In-between toes	discuss the causes of body odour. discuss parts of the body that gives odour. point to parts of the body that gives odour, e.g. armpit, anus, mouth and in-between toes.	List three causes of body odour. How would you remove odour from the following parts of the human body: Armpit, mouth, in-between toes.
	5.1.2 demonstrate how to reduce/minimize or remove body odour	Reducing and removing body odour.	demonstrate ways by which body odour can be removed or reduced. E.g. bathing, use of deodorant, perfume and clean clothes.	What will happen to your body if you do not bath regularly?
	5.1.3 recognize the dangers associated with sharing personal effects with others.	Dangers associated with sharing personal effects with others	Discuss the dangers associated with sharing personal belonging with others. E.g. Spoon, towel, tooth brush, sponge, blade, comb, and handkerchief.	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 WATER POLLUTION	The pupils will be able to: 5.2.1 identify ways water is made unsafe for use	Causes of water pollution: Dumping of waste Sewage Washing Swimming Chemicals for fishing etc	Let pupils: discuss different ways by which water is made unsafe for use through dumping of waste, sewage, washing, swimming, chemicals for fishing etc.	Why is it not good to use another person's towel, sponge, tooth brush and blade?
UNIT 3 WATER PURIFICATION	5.3.1 Demonstrate how to make dirty water clean.	Filtration of water.	Use filter paper/white calico/cotton wool to make dirty water clean. Compare the filtered and the unfiltered water. Discuss their observation.	List two ways that water can be safe for drinking Describe how unclean water can be filtered

