

AREA OF STUDY: Science

UNIT/THEME: Standard VI

AREA OF STUDY OUTCOMES

ST 5.b. Understand the properties and transformation of some forms of energy.

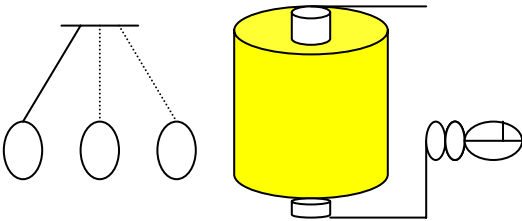
CROSS-CURRICULAR OUTCOMES

Pupil will:

SP2.a. These part in-group activities

SP2.c. Help the group to achieve its goal.

SP2.b. Lead and follow where appreciate

CONTENT ORGANIZED INTO MANAGEABLE SETS	SUGGESTED TEACHING/LEARNING STRATEGIES	SUGGESTED STRATEGIES/ACTIVITIES FOR ASSESSMENT
Transformation of Energy <u>Skills</u> • Observe • Discuss • Draw • Collect • Compare • Indentify • Demonstrate • Share • Arrange • Record • Explain • Prepare • Create • Asses	• Review transformation of energy • Refer to ST 5.b. (Upper Division) • Display apparatus as shown  E.g. Pupil will indicate the correct form of energy, transformed. - A rifle bullet in flight - A moving vehicle - A falling stone - A rotating body, e.g. a flywheel or a top. ▪ Teacher explain that energy cannot be created or destroyed, but only transformed	• Assess pupils participation during discussion • Ability to draw conclusion/make influences based on previous experience and knowledge. • Through direct questioning, asses children's ability to explain energy transformation

AREA OF STUDY: Science

UNIT/THEME: Standard VI

CONTENT ORGANIZED INTO MANAGEABLE SETS	SUGGESTED TEACHING/LEARNING STRATEGIES	SUGGESTED STRATEGIES/ACTIVITIES FOR ASSESSMENT
Attitudes • Co-operation • Share • Respect • Interest • Value • Awareness • Responsibility • Interaction • Honesty	E.g. Pupil identify energy Electricity from used. Q. Coal→Steam→Furbine→Generator→Radiation Chemical Heat Kenetic Electrical Heat A. Energy Energy Energy Energy Energy • Question children on types of energy. E.g: battery→ Potential stored → kenetic • Using the same apparatus children will explain how each energy was used. • Think how many types of energy was used E.g. Mechanical, conduction, heat, radiation, conversion. • Using materials similiar from previous device pupils will arrive with a few sub-devices, to produce: Electricity, Heat, Light, Sound. • Pupils will use additional material to further re-inforce energy transfermation . E.g. nail, two bulb sockets, four pieces of wire,1.5 volts flashlight battery D-cell, Water, tin can, piece of stick.	• Expression of ideas orally. • Willingnesss to participate in discussions and to share and listen to each others ideas.

AREA OF STUDY: Science

UNIT/THEME: Standard VI

CONTENT ORGANIZED INTO MANAGEABLE SETS	SUGGESTED TEACHING/LEARNING STRATEGIES	SUGGESTED STRATEGIES/ACTIVITIES FOR ASSESSMENT
Transfer of Energy 1. Conduction of Energy • Electricity • Simple Circuit 2. Radiation – Heat	1. Produce simple circuit →Series circuit→parallel circuit→ hydro-electricity Electromagnet 2. Nature walk to collect objects, and report how it feels (stone, metal, paper). • Brainstorm how heat radiation can be produced. • Ask pupils to research a (omit) E.g. 1). A radiometer 2). The Salary System 3). Greenhouse 4). X-ray • Ask pupils to research and produce a project on “The Greenhouse”. • Additional activity on heat radiation Material: base, can cover, aluminum foil, candle, Clay, black paper, whit paper. • Light the candle and by holding one side of the aluminum foil tube about 2 inches over the flames, blacken it. • After the aluminum foil tube is cold place it over the lighted candle. The black surface should face the black paper, the shiny surface the white paper.	• Assess children's ability to produce simple circuit. • Research Project refer to ST 4.a ▪ Assess children's research for data collection on Radiation effect on a Greenhouse.

AREA OF STUDY: Science

UNIT/THEME: Standard VI

CONTENT ORGANIZED INTO MANAGEABLE SETS	SUGGESTED TEACHING/LEARNING STRATEGIES	SUGGESTED STRATEGIES/ACTIVITIES FOR ASSESSMENT
Reflection	• In a few minutes the wax on the black paper will melt. NOTE: Reinforce heat can be transferred by radiation. Black surface radiates heat better and receives better heat radiation also. • Ask children what causes us to see objects around us. • When you see yourself in a mirror/bowl of water what do you see? What do you call the image you see? • All images that you can see are caused through reflection. • Ask children to list objects found in their home that produce a reflection. • Have children write their names on a piece of paper, and predict how it will look when being reflected from a mirror. Do activity.	▪ Assess children's ability to share and listen to each other's ideas in discussion and willingness to participate

AREA OF STUDY: Science

UNIT/THEME: Standard VI

CONTENT ORGANIZED INTO MANAGEABLE SETS	SUGGESTED TEACHING/LEARNING STRATEGIES	SUGGESTED STRATEGIES/ACTIVITIES FOR ASSESSMENT
Refraction	• Children will do activity to show “refraction” Use two cups with a coin in bottom – one fill with water – one empty. A glass fill with water with a pencil/straw place in the water. Children observe and report what happens. Oral discussion. Have pupil do-activities to show example of RefractionE.g. - Transparent (allow light to pas through); - Translucent (allow some light to pass through, but not allow to see clearly); - Opaque (do not allow light to pass through). ▪ Give children the following material (flashlight, clear plastic, Board, wax paper) and have them use flashlight with all three materials. ▪ Categorize	▪ Asses children's observation skills ▪ Asses children's ability to categorize examples of Refraction.

AREA OF STUDY: Science

UNIT/THEME: Standard VI

CONTENT ORGANIZED INTO MANAGEABLE SETS	SUGGESTED TEACHING/LEARNING STRATEGIES	SUGGESTED STRATEGIES/ACTIVITIES FOR ASSESSMENT
Vibration	▪ Have pupils relate what happens when the phone rings ▪ How does a human voice travel. E.g. The voice → The transmitter → The wire → reciever → the ears. ▪ Explain that the transfer of energy is the transmission of sound waves, set up by vibration through a media (from one source to another). ▪ Have pupils list other sources of how sound travel. Eg: Matter – (air) ▪ Have pupil do activity to show the speed of sound in matter. E.g: Listen to the water travel in a pipe ▪ Put their ear and have someone tap it. ▪ Echo in a drum (echo is a proof of the reflection of sound waves). E.g: Bats use the echo of Utrasonic Waves to find their way around. • Have pupil draw a device that produce sound vibration. e.g. Megaphone, horn, loud speaker, stethoscope and the ultrasonic. ▪ Pupils will write a paragraph to explain what happens with it thunder and lightning <u>NOTE</u> Light travels very fast, sound travels much slower in air.	▪ Ability to relate ▪ Children produce a chart of different source of how sound travels. ▪ Asses children's ability to listen and interpret. ▪ Draw and explain how device work. ▪ Asses children's diagrams – through direct questioning check for understanding or misconceptions ▪ Asses the ability to write for a full range of facts.

AREA OF STUDY: Science**UNIT/THEME: Standard VI**

LINKAGES/CONNECTIONS	RECOMMENDED RESOURCES: TEACHER/STUDENT
▪ SL3.b. Demonstrate unity and coherence in their writing. ▪ SL4.a. Interpret simple forms, notes, messages, and follow instructions and directions. ▪ EL1.d. Apply functional reading skills (including comprehension skills) in the selection, reading and interpretation of texts ▪ EL2.a. Repond sentiviely and appropriately to auditory and visual stimuli. ▪ EL3.c. Demonstrate the ability to write for a full range of purposes. ▪ EL3.d. Produce writtten work for selfullfilment and aesthetic satisfaction. ▪ EL4..c. Use body laguage to compliment speech. ▪ H1.d. The consequences of dangerous situations and unsafe practice, and how to repond to those consequences. ▪ WT3.a. The elements which contribute to the effectiveness of the works people do. ▪ WT4.a. Identify an area of need. ▪ M2.c. How shapes fit together to form patterns. ▪ M4.b. Predict the likely occurence of an event, through logical reasoning, based on trends. ▪ M5.a. Collect, analyse and interpret data and predict probable outcomes. ▪ WT1.b. Design a device to meet a need/solve a problem. ▪ WT1.c. Construct a simple device to see if it meets a need/solve a problem. ▪ WT1.d. Test a simple device to see if it meets a need/solve a problem. ▪ ST5.a. How particle theory relates to change in different materials and substances. ▪ ST5.b. Understand the properties and transformation of some forms of energy. ▪ ST6.a. The effects of forces on matter in relation to mass, speed, and direction.	▪ Basic Science – Vilmos R. Misangyi ▪ Science Probe. Bk 8 – Second Edition The Wiley Science Program. ▪ Integrated Science for Caribbean School Bk. 1 and 2. New Edition - Florence Commission, Florine Dalgety - Norman Lambert – Heinemann ▪ Focus on Science – Exploring the Natural World – Sough/Flanagan

AREA OF STUDY: Science

UNIT/THEME: Standard VI

LINKAGES/CONNECTIONS	RECOMMENDED RESOURCES: TEACHER/STUDENT
▪ ST.b. How the force created by combining simple machines can accomplish a common task. ▪ EA1.c. Identify and produce different styles of music.	

AREA OF STUDY: Science

UNIT/THEME: Standard VI

AREA OF STUDY OUTCOMES

Pupils should:

St6.a – Pupils should understand the effects of forces on matter in relation to mass, speed and direction.

CROSS-CURRICULAR OUTCOMES

Pupils should:

CP1a – Recognize an issue or a problem

CP1c – Suggest ways of dealing with an issue/problem

SP2a – Take part in group activities

SP2e – Help the group to achieve its goal

CONTENT ORGANIZED INTO MANAGEABLE SETS	SUGGESTED TEACHING/LEARNING STRATEGIES	SUGGESTED STRATEGIES/ACTIVITIES FOR ASSESSMENT
▪ FIRST LAW OF MOTION: A object at rest will remain at rest unless acted upon by an outside force. An object travelling in a straight line will continue to do so unless an outside force deflects or stops it. This tendency to remain at rest or moving in a straight line is an object's inertia. <u>Skills</u> ▪ Hypothesize ▪ Obtain ▪ Observe ▪ Explain <u>Attitudes</u> ▪ Willingness to experiment Demonstrate an understanding	1. Place a tennis ball in a cart or wagon. Quickly move the wagon forward. Children observe (Result: When the wagon moves forward, the ball hits the back of the wagon). (b) Ask children to hypothesize why this is so? Hold a class discussion around children's ideas/hypotheses. Through discussion and questioning elicit that the ball did not move only the wagon moved. The wagon was literally pulled from under the ball since the ball is not attached.	▪ Observational ability ▪ Explain why the ball hit the back of the wagon and whether it actually moved.

UNIT/THEME: Standard VI

A diagram showing a coin resting on a card, which is placed on top of a cup. The card is being pulled to the right, as indicated by an arrow. Labels with leader lines identify the 'Coin', 'card', and 'cup'.

AREA OF STUDY: Science

UNIT/THEME: Standard VI

CONTENT ORGANIZED INTO MANAGEABLE SETS	SUGGESTED TEACHING/LEARNING STRATEGIES	SUGGESTED STRATEGIES/ACTIVITIES FOR ASSESSMENT
	Children will cut a 1 inch square section from the top of the paper cup. 4 oz ▪ Place the cup over the ruler. The end of the ruler should touch the back side of the cup. ▪ Raise the opposite end of the ruler and rest it on the pencil. ▪ Place the marble in the center groove of the ruler at the ruler's highest end. ▪ Release the marble and observe the cup. ▪ Raise the end of the ruler and rest it on the edge of the book. ▪ Again position the marble in the groove at the ruler's highest end. ▪ Release the marble and observe the cup. ▪ Record your observation ▪ Ask children to explain what happen and why? (Result: The cup moves when the marble strikes it. The cup moved an additional distance when the ruler rested on the book).	▪ Direct questioning

UNIT/THEME: Standard VI

CONTENT ORGANIZED INTO MANAGEABLE SETS	SUGGESTED TEACHING/LEARNING STRATEGIES	SUGGESTED STRATEGIES/ACTIVITIES FOR ASSESSMENT
Second Law of Motion: Any change of motion depends on the magnitude and force applied and the mass of the object. <u>Skills</u> - Construct - Discussion - Plot - Observe - Record - Explain <u>Attitudes</u> - Willingness to experiment - Share/demonstrate an interest in the concept	- Construct a slope using books a 2ft length of 1 X 4 (wood); collect milk can $\frac{1}{4}$ full with sand a toy truck. - Place a 4 oz. weight on truck and allow truck to roll down the slope. - Children will observe and record the distance the can moved. - Repeat procedure by adding 4 oz. At a time to the truck. - Plot a graph to show to show the distance traveled by the can against the different weight added to truck at each interval. - Discuss results.	- Predicting what makes some objects move. Eg. When objects acted upon. - Reactions to some of the activities involving the use of force. - Construct graph and plot points. - Seat work-answer questions based on lesson.

AREA OF STUDY: Science

UNIT/THEME: Standard VI

CONTENT ORGANIZED INTO MANAGEABLE SETS	SUGGESTED TEACHING/LEARNING STRATEGIES	SUGGESTED STRATEGIES/ACTIVITIES FOR ASSESSMENT
▪ For every action there is an equal opposite reaction. <u>Skills</u> ▪ Collecting ▪ Organizing ▪ Comparing <u>Attitudes</u> ▪ Sharing ▪ Team work	▪ Construct two equal slopes using approximately five to six books. ▪ Locate two equal pieces of boards (1 inches X 4 inches = 2 feet long) and set up as illustrated in the diagram. ▪ The two toy cart or vehicle should be release at the same time. ▪ Instruct the student o observe the conclusion and and discuss. ▪ Repeat the procedure but increase both weights of the two carts ▪ Ask children to discuss and compare the two experiments.	▪ Sketch the apparatus on the board. ▪ Simplify and explain the procedures. ▪ Group students and allow each group to carry out the procedures.

AREA OF STUDY: Science

UNIT/THEME: Standard VI

AREA OF STUDY OUTCOMES

Pupils should:

ST6b – Pupils will understand the force created by combining simple machines can accomplish a common task.

CROSS-CURRICULAR OUTCOMES

Pupils should:

**CP1b – Examine information related to the problem/issue
Cp1c – Suggest ways of dealing with the problem/issue.
SP2a – Take part in group activities
SP3b – Assess progress in relation to achievement of goals and adjust goals/strategies as necessary**

CONTENT ORGANIZED INTO MANAGEABLE SETS	SUGGESTED TEACHING/LEARNING STRATEGIES	SUGGESTED STRATEGIES/ACTIVITIES FOR ASSESSMENT
- Simple machines can be combined/put together to accomplish a common task. <u>Skills</u> - Observe - Identify - Write - Analyze - Construct - Review - Explain - Give example <u>Attitudes</u> - Understanding - Ability to use - Experiment - Share	- Review simple machines learned in middle division: - Inclined plane - Lever - Pully - Wedge - Screw - Wheels and axel - Children will be given examples of every day simple machines and be sure to explain how they work in terms of parts of the machines, the effect and load and direction of effect and load. - Bring a bicycle or other suitable compound machine to class. - Children will be asked to observe the bike e.g: screws, levers, pulling/gears chain, wheel and axel) - Ask children to demonstrate and occasionally or in writing how there simple machine work together to make the bicycle work – go, stop, turn.	- Direct questioning - Demonstrate how various simple machines work. - Clarity of oral presentations - Draw and label the parts of a bicycle. - Children ability rto share ideas and opinions. - Observing and identifying simple machines. - Journal entries on compound machines.

AREA OF STUDY: Science

UNIT/THEME: Standard VI

CONTENT ORGANIZED INTO MANAGEABLE SETS	SUGGESTED TEACHING/LEARNING STRATEGIES	SUGGESTED STRATEGIES/ACTIVITIES FOR ASSESSMENT
	▪ Pedal arm = lever that turn sprcket (gear/wheel) which pulls on chain which turns rachet (gear/wheel) which turns back wheel. ▪ Hand brakes = lever which pull on cable attached which pulls on lever to cause brake pads to rub against rim and stop the wheels turning. ▪ Handle bar = lever which turns the front wheel to change direction. ▪ If foot brakes = has a “screw” inside which when you peddle backwards forces a cylinderial object against the tube to cause the wheel to stop. 2. Children will transfer skills of analysing compound machines into simple machines by analysing other examples of compound machines: e.g. mechanical - corn mill grinder - cocunut grater - egg beater - toys (remote control) - exercise machines - screw jack ▪ Children will construct their own compound machines e,g, crane ▪ Children identify a need, design and construct a compound machine to satisfy a need.	▪ Children's ability to differentiate between simple and compound machine. ▪ Design and construct a compound machine in groups. ▪ Composition on the advantages of simple and compound machines.

AREA OF STUDY: Science

UNIT/THEME: Standard VI

LINKAGES/CONNECTIONS	RECOMMENDED RESOURCES: TEACHER/STUDENT
EL3.a – Produce written work that demonstrate proper machines and proficiency in the conventions of writing. WT3.a – the elements which contribute to the effectiveness of the work people do. M2.d - the relationship between angles in different two-dimensional shapes. WT1.c - Construct a simple device to meet a need/solve a problem ST6.b - how the force created by combining simple machines can accomplish a common task.	▪ The Science Teacher's Handbook, Andy Byers, Ann Charles and Chris Laine pg. 92 ▪ Physics for Every Kid, Jania Van Cleave's pg. 108

AREA OF STUDY: Science

UNIT/THEME: Standard VI

LINKAGES/CONNECTIONS	RECOMMENDED RESOURCES: TEACHER/STUDENT
M4.b. Predict the likely occurrence of an event through logical reasoning, based on trends. ST6.a. The effects of process on matter in relation to mas, speed, and direction. M5.a. Collect, analyse and interpret data and predict probable outcomes.	• The Science Teachers Handbook, Andy Byers, Ann Charles, and Chris Laine. Page. 88 • Physics for every kid, Janice Van Cleave's. Page. 155, 136,130,138.