



**REPUBLIC OF KENYA
MINISTRY OF EDUCATION**

JUNIOR SECONDARY SCHOOL CURRICULUM DESIGN

GRADE 7

INTEGRATED SCIENCE FOR LEARNERS WITH HEARING IMPAIRMENT.



KENYA INSTITUTE OF CURRICULUM DEVELOPMENT

First Published in 2022

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FOREWORD

Curriculum is a tool which a country employs to empower its citizens. The Kenya Institute of Curriculum Development in meeting its core mandate '*to develop curriculum and curriculum support materials*' has spearheaded curriculum reforms in the education sector. The reforms are based on rigorous research, monitoring and evaluation activities conducted on the 8-4-4 system of education to inform the Competency-Based Curriculum through a phase-in phase-out model. The reforms were informed by the Summative Evaluation Survey (2009), Needs Assessment Study (2016) and the Task Force Report on Re-alignment of Education Sector (2012), 21st century learning and approaches, the East Africa Protocol on harmonisation of education, among many others.

The curriculum reforms aim at meeting the needs of the Kenyan society by aligning the curriculum to the Constitution of Kenya 2010, the Kenya Vision 2030 and the East African Protocol, among other policy requirements as documented by the Sessional Paper No. 1 of 2019 on 'Reforming Education and Training in Kenya for Sustainable Development'. The reforms adopted the Competency-Based Curriculum (CBC) to achieve development of requisite knowledge, skills, values and attitudes that will drive the country's future generations as documented by the Basic Education Curriculum Framework (BECF). Towards achieving the mission of the Basic Education, the Ministry of Education has successfully and progressively rolled out curriculum implementation for Early Years Education and Foundation level, Grades 4 ,5 and Intermediate Level. The roll out for Grade 6, Junior Secondary (Grade 7-9), and Prevocational Level will subsequently follow.

It is my hope that the Curriculum designs for learners with Hearing Impairment in Grade 7 will guide the teachers, among other educational stakeholders, for progressive achievement of the curriculum vision which seeks to have engaged, empowered and ethical citizens.

PROF. GEORGE A. O. MAGOHA, EGH
CABINET SECRETARY,
MINISTRY OF EDUCATION

PREFACE

The Government of Kenya embarked on the national implementation of the Competency Based Curriculum in January, 2019 for Early Years Education (Pre-Primary 1 and 2, and Lower Primary Grade 1, 2 and 3) and Foundation Level. The implementation progressed to Upper Primary (Grade 4, 5 and 6) and Intermediate Level based on the reorganisation of the Basic Education structure. Grade 7 curriculum furthers implementation of the Competency-Based Curriculum to Junior Secondary education level. This level marks the zenith of Middle School education whose main feature is to offer a broad opportunity for the learner to explore talents, interests and abilities before selection of pathways and tracks in Senior Secondary education level. This is similar to the Pre-vocational and Vocational Level.

The Grade 7 curriculum designs for learners with Hearing Impairment in the respective learning areas will enable the development of 21st Century competencies. Ultimately, this will lead to the realisation of the vision and mission of the Competency-Based Curriculum as documented in the Basic Education Curriculum Framework (KICD, 2017).

It is my hope that all Government agencies among other stakeholders in education will use the designs to guide effective and efficient implementation of the learning activities as well as provide relevant feedback on various aspects of the curriculum. Successful implementation of the Grade 7 curriculum for learners with Hearing Impairment will be a significant milestone towards realisation of the curriculum mission ‘Nurturing Every Learner’s Potential’.

JULIUS O. JWAN, PhD, CBS
PRINCIPAL SECRETARY
STATE DEPARTMENT FOR EARLY LEARNING AND BASIC EDUCATION
MINISTRY OF EDUCATION

ACKNOWLEDGEMENT

The Kenya Institute of Curriculum Development (KICD) Act Number 4 of 2013 (Revised 2019) mandates the Institute to develop curricula and curriculum support materials for basic and tertiary education and training, below the university. The curriculum development process for any level involves thorough research, international benchmarking, and robust stakeholder engagement. Through this systematic and consultative process, KICD conceptualised the Competency Based Curriculum (CBC) as captured in the Basic Education Curriculum Framework (BECF). The CBC responds to the demands of the 21st Century and the aspirations captured in the Constitution of Kenya 2010, Kenya Vision 2030, East African Commission Protocol and the United Nations Sustainable Development Goals.

The Kenya Institute of Curriculum Development has developed and adapted the Grade 7 curriculum designs for learners with Hearing Impairment taking cognisance of the tenets of the CBC, key among them being the need to ensure that learners are provided with learning experiences that call for higher order thinking, thereby ensuring they become engaged, empowered and ethical citizens as articulated in the BECF Vision. The Grade 7 designs for learners with Hearing Impairment also provide opportunities for learners to develop the core competencies as well as engage in Community Service Learning. The designs present assessment rubric linked to sub strands in the individual subjects. Teachers are encouraged to use varied assessment tools when assessing learners.

KICD obtains its funding from the Government of Kenya to enable the achievement of its mandate and implementation of the Government and Sector (Ministry of Education (MoE) plans. The Institute also receives support from development partners targeting specific programmes. The Grade 7 curriculum designs have been developed and adapted with the support of the World Bank through the Kenya Secondary Education Quality Improvement Program (SEQIP) commissioned by the MoE. The Institute is grateful for the support accorded to the process by the Government of Kenya, through the MoE and the development partners for the policy, resource, and logistical support.

I acknowledge the KICD curriculum developers and other staff, teachers and all the educators who participated, as panelists, in the development and adaption of the designs. I also appreciate the contribution of the Semi-Autonomous Government Agencies (SAGAs) and representatives of various stakeholders for their various roles in the development and adaptation of the Grade 7 curriculum designs.

My special thanks to the Cabinet Secretary, Ministry of Education; the Principal Secretary State Department of Early Learning and Basic Education; the Secretary, Teachers' Service Commission (TSC) and the Chief Executive Officer, Kenya National Examinations Council (KNEC) for their support in the process. Finally, I am grateful to the KICD Governing Council for their consistent guidance during the development and adaptation of the curriculum designs. The Institute assures all curriculum implementers, parents, and other stakeholders that the designs will ensure effective implementation of the CBC at Grade 7.

PROF. CHARLES O. ONG'ONDO, PhD, MBS
DIRECTOR/CHIEF EXECUTIVE OFFICER
KENYA INSTITUTE OF CURRICULUM DEVELOPMENT

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TIME ALLOCATION

	Subject	Number of Lessons Per Week (40 minutes per lesson)
1.	English	5
2.	Kiswahili/KSL	4
3.	Mathematics	5
4.	Integrated Science	4
5.	Health Education	2
6.	Pre technical Studies	4
7.	Social Studies	3
8.	Religious Education (CRE/IRE/HRE)	3
9.	Business Studies	3
10.	Agriculture	3
11.	Life Skills Education	1
12.	Physical Education and Sports	2
13.	Optional Subject including Sign Language Skills	3
14.	Optional Subject	3
	Total	45

NATIONAL GOALS OF EDUCATION

Education in Kenya should:

i) Foster nationalism and patriotism and promote national unity.

Kenya's people belong to different communities, races and religions, but these differences need not divide them. They must be able to live and interact as Kenyans. It is a paramount duty of education to help young people acquire this sense of nationhood by removing conflicts and promoting positive attitudes of mutual respect, which enable them to live together in harmony and foster patriotism in order to make a positive contribution to the life of the nation.

ii) Promote the social, economic, technological and industrial needs for national development.

Education should prepare the youth of the country to play an effective and productive role in the life of the nation.

a) Social Needs

Education in Kenya must prepare children for changes in attitudes and relationships, which are necessary for the smooth progress of a rapidly developing modern economy. There is bound to be a silent social revolution following in the wake of rapid modernization. Education should assist our youth to adapt to this change.

b) Economic Needs

Education in Kenya should produce citizens with the skills, knowledge, expertise and personal qualities that are required to support a growing economy. Kenya is building up a modern and independent economy, which is in need of an adequate and relevant domestic workforce.

c) Technological and Industrial Needs

Education in Kenya should provide learners with the necessary skills and attitudes for industrial development. Kenya recognizes the rapid industrial and technological changes taking place, especially in the developed world. We can only be part of this development if our education system is deliberately focused on the knowledge, skills and attitudes that will prepare our young people for these changing global trends.

Promote individual development and self-fulfillment

Education should provide opportunities for the fullest development of individual talents and personality. It should help children to develop their potential interests and abilities. A vital aspect of individual development is the building of character.

iii) Promote sound moral and religious values.

Education should provide for the development of knowledge, skills and attitudes that will enhance the acquisition of sound moral values and help children to grow up into self-disciplined, self-reliant and integrated citizens.

iv) **Promote social equality and responsibility.**

Education should promote social equality and foster a sense of social responsibility within an education system, which provides equal educational opportunities for all. It should give all children varied and challenging opportunities for collective activities and corporate social service irrespective of gender, ability or geographical environment.

v) **Promote respect for and development of Kenya's rich and varied cultures.**

Education should instill in the youth of Kenya an understanding of past and present cultures and their valid place in contemporary society. Children should be able to blend the best of traditional values with the changing requirements that must follow rapid development in order to build a stable and modern society.

vi) **Promote international consciousness and foster positive attitudes towards other nations.**

Kenya is part of the international community. It is part of the complicated and interdependent network of peoples and nations. Education should therefore lead the youth of the country to accept membership of this international community with all the obligations and responsibilities, rights and benefits that this membership entails.

viii. **Promote positive attitudes towards good health and environmental protection.**

Education should inculcate in young people the value of good health in order for them to avoid indulging in activities that will lead to physical or mental ill health. It should foster positive attitudes towards environmental development and conservation. It should lead the youth of Kenya to appreciate the need for a healthy environment.

LEARNING OUTCOMES FOR MIDDLE SCHOOL

By the end of Middle School, the learner should be able to:

1. Apply literacy, numeracy and logical thinking skills for appropriate self-expression.
2. Communicate effectively, verbally and non-verbally, in diverse contexts.
3. Demonstrate social skills, spiritual and moral values for peaceful co-existence.
4. Explore, manipulate, manage and conserve the environment effectively for learning and sustainable development.
5. Practice relevant hygiene, sanitation and nutrition skills to promote health.
6. Demonstrate ethical behaviour and exhibit good citizenship as a civic responsibility.
7. Appreciate the country's rich and diverse cultural heritage for harmonious co-existence.
8. Manage pertinent and contemporary issues in society effectively.
9. Apply digital literacy skills for communication and learning.

ESSENCE STATEMENT

Integrated science is a new subject area that enable learners with hearing impairment to apply distinctive ways of logical valuing, thinking and working to understand natural phenomena in the biological, physical and technological world. The emphasis of science education for learners with hearing impairment at lower secondary levels is to enhance learners' scientific thinking through learning activities that involve the basic science process skills. Learners with hearing impairment utilise their sense of vision more when making observations during practicals. They also communicate their findings through sign language and visual illustration. For learners with hearing impairment to realise their full potential, some of the adaptation made in integrated science are ; use of oral and signed modes, audio visuals pre recordings, closed captioned videos, adapting assessment activities according to the abilities of the learners, harmonising signs of new words to address variations, adapting the learning resources to be accessible and readily available in the immediate environment, using assistive devices like hearing aid to assist the hard of hearing, ensuring the learning environment is brightly lit, use of total communication during lesson delivery to benefit both the deaf learners and hard of hearing, ensuring appropriate positioning of learners who can utilise lip reading and guiding learners to work in small groups during activities to ensure equal participation. The subject area has been adapted to create a

scientific culture that inculcates scientific literacy to enable learners to make informed choices in their personal lives and approach life challenges in a systematic and logical manner.

Integrated science provides the learner with the basic requisite skills, knowledge, values and attitudes necessary for specialisation in the STEM pathway at senior school level. The rationale for inclusion of integrated Sc. is anchored in The Kenya Vision 2030, Sessional Papers No. 14 of 2012, and No. 1 of 2019, which all underscore the importance of Science, Technology and Innovation in education and training. The subject area is to be taught through inquiry-based learning approaches

SUBJECT GENERAL LEARNING OUTCOMES

By the end of Junior Secondary School, the learner should be able to:

1. Acquire scientific knowledge, skills, values and attitudes to make informed choices on career pathways at senior school.
2. Select, improvise and safely use basic scientific tools, apparatus, materials and chemicals effectively in everyday life.
3. Explore, manipulate, manage and conserve the environment for learning and sustainable development.
4. Practice relevant hygiene, sanitation and nutrition skills to promote good health.
5. Apply the understanding of body systems with a view to promote and maintain good health.
6. Develop capacity for scientific inquiry and problem solving in different situations.
7. Appreciate and use scientific principles and practices in everyday life.
8. Apply acquired scientific skills and knowledge in everyday life

STRAND 1.0: SCIENTIFIC INVESTIGATION

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Scientific Investigation	1.1 Introduction to Integrated Science (4 Lessons)	By the end of the sub-strand the learner should be able to; <ol style="list-style-type: none"> a) identify the components of Integrated Science as a field of study, b) relate knowledge and skills of different components of Integrated Science to career opportunities, c) appreciate the importance of Integrated Science in daily life. 	The learner is guided to: <ul style="list-style-type: none"> ● Fingerspell and sign the components of integrated science as a field study. ● Discuss in groups, the meaning of various components of Integrated Science and share with peers in class ● Explore the skills to be learned in various components of integrated science. ● Watch a signed/animated video showing people engaged in different careers related to integrated science. ● Discuss in groups, career opportunities related to knowledge and skills gained in Integrated Science.<i>(learners discuss careers such as engineering, medicine, pharmacy, medical engineering, teaching)</i> ● Take and record measurements of real objects and make real-life observations around the school compound <i>(learners take measurements of their peers, length of playing fields and observe insects)</i> 	How is the knowledge acquired in Integrated Science useful in daily life?

			<p><i>and other animals around the school)</i></p> <ul style="list-style-type: none"> ● Identify pathways related to Integrated Science at senior school. (<i>STEM, applied sciences, pure sciences, technical engineering</i>) ● Search for information online or from print sources on the importance of Integrated Science in daily life. ● Discuss in groups, the importance and application of scientific knowledge in daily life. ● Discuss with invited resource persons the importance of integrated science in daily life. 	
<p>Core competencies to be developed:</p> <ul style="list-style-type: none"> ● Communication and collaboration as learners discuss in groups the importance of scientific knowledge in daily life. ● Citizenship as learners search for local and international career opportunities related to Integrated Science. ● Digital literacy as learners use digital devices to search for information on the application of Integrated Science in daily life. ● Self-efficacy as learners discuss confidently the pathways and career opportunities associated with Integrated Science. 				
<p>Pertinent and Contemporary Issues (PCIs)</p> <ul style="list-style-type: none"> ● Critical thinking and problem solving as learners discuss how scientific knowledge is applied in solving problems within their environment and in generating income. ● Safety and security as learners search for information on the internet using the digital devices in observing cyber security regulations. 			<p>Values:</p> <ul style="list-style-type: none"> ● Respect: promoted as learners respect opinions of others during the discussions. ● Responsibility: is promoted as learners take care of digital devices allocated to them. 	
<p>Links to other Subjects:</p> <ul style="list-style-type: none"> ● Computer science: learners search for information from the internet using digital devices. ● Pre- Technical and Pre-Career Education: learners are guided on career opportunities related to integrated science. 				

<p>Suggested non-formal activities to support learning- Science club; holding science and engineering fairs to elaborate on the importance of integrated science in day-to-day living. Organises trips and exhibitions on careers related to integrated science.</p>	<p>Suggested mode of assessment</p> <ul style="list-style-type: none"> ● Observation ● Practical Work ● Assessment Rubrics ● Checklist ● Anecdotal Records ● Written Test ● Signed questions and Answers ● Projects
<p>Suggested learning resources</p> <ul style="list-style-type: none"> ● Digital devices. ● Resource person ● Textbooks ● charts 	

Assessment Rubric				
Criteria	Exceeds expectation	Meets expectation	Approaches expectation	Below expectation
Identifying the components of Integrated Science	Identifies and explains components of Integrated Science	Identifies components of Integrated Science	Identifies some components of Integrated Science	Identifies some components of Integrated Science with support.
Relating knowledge and skills of different components of Integrated Science to career opportunities	Relates with explanations, knowledge and skills of different components of Integrated Science to career opportunities.	Relates knowledge and skills of different components of Integrated Science to career opportunities	Relates some knowledge and skills of different components of Integrated Science to career opportunities	Attempts to relate knowledge and skills of different components of Integrated Science to career opportunities.

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Scientific Investigation	1.2 Laboratory Safety 8 Lessons	<p>By the end of the sub-strand the learner should be able to;</p> <p>a) identify common hazards and their symbols in the laboratory,</p> <p>b) analyse causes of common accidents in the laboratory,</p> <p>c) demonstrate first aid safety measures for common laboratory accidents,</p> <p>d) appreciate the importance of safety in the laboratory and access to a healthy working environment.</p>	<p>The learner is guided to:</p> <ul style="list-style-type: none"> ● Observe and identify common hazards and accidents from a chart in the laboratory. ● Fingerspell and sign common hazards and their symbols. ● Draw and name common hazard symbols. ● Interpret common hazard symbols, including but not limited to flammable, corrosive, toxic, carcinogenic, radioactive substances among others. ● Discuss in groups, causes of common laboratory accidents and related first aid measures (burns and scalds, cuts, and ingestion of harmful substances). ● Role-play some first aid procedures for common accidents in the laboratory. ● Practice safety measures in the laboratory and the general school learning environment in groups. ● Formulates basic rules and precautions to be observed in the laboratory. ● Discuss the importance of safety measures in the laboratory. ● Search for laboratory safety procedures from online/print materials (internet, e-libraries among others). 	<ol style="list-style-type: none"> 1. How do accidents occur in the laboratory? 2. Why should we consider safety measures when carrying out experiments in the laboratory?

<p>Core competencies to be developed:</p> <ul style="list-style-type: none"> ● Communication and collaboration as learners work in groups during discussions and practice laboratory safety measures. ● Imagination and Creativity as learners prepare and role-play on first aid procedures. ● Digital literacy as learners, use digital devices to access and study content on First Aid procedures. ● Citizenship as learners, adhere to laboratory safety measures for self and others. 	
<p>Pertinent and Contemporary Issues (PCIs)</p> <p>First aid as learners' role play some first aid procedures for common accidents in the laboratory.</p> <p>Decision making as learners formulates basic rules and precautions to be observed in the laboratory.</p>	<p>Values:</p> <ul style="list-style-type: none"> ● Respect is promoted as learners become considerate of the opinion of others while working in groups, discussing and role-playing. ● Responsibility is enhanced as learners become responsible for their own safety and safety of others when working in the laboratory; responsible and prudent usage of laboratory materials and proper disposal of waste is enhanced.
<p>Links to other Subjects:</p> <ul style="list-style-type: none"> ● Health Education- the practice of safety and first aid and dangers of chemicals ● Home Science-First aid procedures during practicals 	
<p>Suggested Non formal activities to support learning-</p> <p>Collecting and proper disposal of laboratory waste materials to minimises accidents in the laboratory</p>	<p>Suggested mode of assessment</p> <ul style="list-style-type: none"> ● Observation ● Practical Work ● Assessment Rubrics ● Checklist ● Anecdotal Records ● Written Test ● Oral/Signed Questions and Answers

Suggested learning resources

- First aid kit
- Textbooks
- Digital devices
- Charts
- Course book

Assessment Rubric

Criteria	Exceeds expectation	Meets expectation	Approaches expectation	Below expectation
Identifying common hazards and their symbols in the laboratory.	With explanations, identifies common hazards and their symbols in the laboratory.	Identifies common hazards and their symbols in the laboratory.	Identifies some common hazards and their symbols in the laboratory.	Identifies some common hazards and their symbols in the laboratory, with prompts
Analysing causes of common accidents in the laboratory	With examples analyses causes of common accidents in the laboratory.	Analyses causes of common accidents in the laboratory.	Analyses some causes of common accidents in the laboratory	Analyses some causes of common accidents in the laboratory with prompts.
Demonstrating first aid safety measures for common laboratory accidents.	Procedurally demonstrates first aid safety measures for common laboratory accidents.	Demonstrates first aid safety measures for common laboratory accidents.	Demonstrates first aid safety measures for some common laboratory accidents.	Demonstrates first aid safety measures for some common laboratory accidents with support.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Scientific Investigation	1.3. Basic Science skills (10 Lessons)	By the end of the sub strand the learner should be able to; a) identify basic skills in science,	<ul style="list-style-type: none"> ● The learner is guided to: 	1. How are basic skills in science important in daily life?

		<p>b) use the International System of Units (SI) for basic and derived quantities in science,</p> <p>c) appreciate the application of Basic skills in science.</p>	<ul style="list-style-type: none"> ● Search for relevant information from print media/ internet on basic science skills ● Identify and sign basic skills in integrated science. (Manipulative, observation, measurement, classification, prediction, communication and conclusion skills). <p><i>Observing-For learners who are Deaf, observations that involve sounds, pair the learner with those with residual hearing or amplify the sound e.g instead of pop sound, bubbles or effervescence can be used.</i></p> <p><i>Communicating- in communicating the results the learner can use sign language/oral and in writing (provide a sign language interpreter where applicable)</i></p> <ul style="list-style-type: none"> ● Brainstorm in groups on the importance of reading packing labels on quantities/products. ● Apply the International System of Units (SI) to determine temperature, length, mass, time, electric current, area, volume and density. 	<p>2. How is Science information communicated?</p>
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<p>Pertinent and Contemporary Issues (PCIs)</p> <ul style="list-style-type: none"> ● Friendship formation as learners make new friends as they discuss in groups ● Effective communication as learners discuss in groups and improve on their communication skills. 	<p>Values</p> <p>Respect is enhanced as learners learn how to value each other's views in the process of applying Science skills in their learning.</p> <p>Unity is strengthened as learners work in groups applying Science skills.</p>
<p>Core competencies to be developed:</p> <ul style="list-style-type: none"> ● Citizenship as learners identify and state the SI units for basic and derived quantities for international awareness. ● Self-efficacy as learners presenting their findings on the importance of basic science skills. ● Critical thinking and problem solving as learners apply the International System of Units (SI) to determine length, mass, time, temperature, electric current, area, volume and density. 	
<p>Links to other subjects:</p> <ul style="list-style-type: none"> ● Computer science as learners search for information from the internet using digital devices. ● Home science as learners' measure quantity in ingredients. ● Agriculture-as learners apply agricultural science in chemical units. ● Mathematics-as learners are able to apply the SI units' knowledge to solve metric equations. 	
<p>Suggested non-formal activities to support learning</p> <p>A visit to a local shopping centre, observe, ask and answer questions on weighing scales.</p>	<p>Suggested mode of assessment</p> <ul style="list-style-type: none"> ● Practical Work ● Observation Schedule ● Checklist ● Course book
<p>Suggested learning resources</p> <ul style="list-style-type: none"> ● Course book ● Digital devices ● Thermometer 	

Assessment Rubric				
Criteria	Exceeds expectation	Meets expectation	Approaches expectation	Below expectation
Identifying basic skills in science (manipulative, observation, measurement, classification, prediction, communication and conclusion skills).	Analyzes seven basic skills in Science.	Identifies seven basic skills in Science.	Identifies at least four basic Science skills.	Identifies at most three basic Science skills with prompts.
Using the International System of Units (SI) for basic and derived quantities in science.	With explanations uses the International System of Units (SI) for basic and derived quantities in science.	Uses the International System of Units (SI) for basic and derived quantities in science.	Uses the International System of Units (SI) for basic and some derived quantities in science.	With support, uses the International System of Units (SI) for basic and some derived quantities in science.

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Question(s)
1.0 Scientific Investigation	1.4 Laboratory apparatus and instruments 11 Lessons	By the end of the sub-strand the learner should be able to; a) identify apparatus and instruments used in the laboratory, b) handle and care for the apparatus and instruments in laboratory, c) appreciate the importance of consumer protection when handling different apparatus and chemicals in the laboratory.	The learner is guided to: <ul style="list-style-type: none"> Use digital devices, charts and pictures to identify apparatus and instruments in the laboratory (for heating, measuring mass, temperature, length, volume, weight, magnification and time) (include parts and functions of a microscope and Bunsen burner). Sign and fingerspell apparatus and instruments in the laboratory (for heating, measuring mass, temperature, length, volume, weight, magnification and time) (include parts and functions of a microscope and Bunsen burner). Role-play appropriate handling and use apparatus and instruments in the laboratory. 	<ol style="list-style-type: none"> What are the uses of different laboratory apparatus and instruments? What are the basic measures that should be considered when storing different laboratory apparatus?

			<ul style="list-style-type: none"> • Handle and use apparatus and instruments in the laboratory. • Search for information from the internet on safety precautions to take when handling apparatus and instruments in the laboratory. • Watch a signed/captioned video on precautions when handling chemicals, apparatus and instruments in the laboratory. • Discuss in groups importance of consumer protection when handling different apparatus and chemicals in the laboratory. • Practice safety precautions when handling chemicals, apparatus and instruments in the laboratory. 	
<p>Core competences to be developed:</p> <ul style="list-style-type: none"> • Communication and Collaboration is enhanced as learners work together in using different apparatus and equipment to carry out laboratory experiments and activities • Citizenship is promoted as learners observe their own safety and others when handling apparatus and instruments. • Digital literacy is developed as learners use digital devices to search for content on safety precautions to observe when handling apparatus and instruments. 				
<p>Pertinent and Contemporary Issues (PCIs)</p> <ul style="list-style-type: none"> • Environmental Education is promoted as learners learn how to care for the environment as they appropriately dispose of the consumables and any broken equipment as they use laboratory equipment and apparatus to do experiments, • Disaster Risk Reduction is promoted as learners observe safety precautions when handling apparatus and instruments in the laboratory. 				
<p>Values:</p> <ul style="list-style-type: none"> • Respect is promoted as learners respect others' opinions while working in groups. • Responsibility is promoted as learners care for apparatus, chemicals and specimen, as they handle laboratory equipment and apparatus during experimental work. 				

Links to other subjects:

- **Home Science** as learners carries out measurements of ingredients when preparing meals.
- **Mathematics** as learners carries out measurements of various quantities of substances.

Assessment Rubric

Indicator	Exceeds expectation	Meets expectation	Approaches expectation	Below expectation
Identifying apparatus and instruments used in the laboratory.	Correctly and exhaustively identifies apparatus and instruments used in the laboratory.	Identifies apparatus and instruments used in the laboratory.	Identifies some apparatus and instruments used in the laboratory.	With prompts identifies some apparatus and instruments used in the laboratory.
Handling and caring for the apparatus and instruments in laboratory.	With justification, handles and cares for the apparatus and instruments in laboratory.	Handles and cares for the apparatus and instruments in laboratory.	Handles and cares for some of the apparatus and instruments in laboratory.	With support, handles and cares for some of the apparatus and instruments in laboratory.

STRAND 2.0: MIXTURES

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
Elements and Compounds 2.0 Mixtures,	2.1 Mixtures 14 Lessons	By the end of the sub strand the learner should be able to; <ol style="list-style-type: none"> classify different types of mixtures as homogeneous or heterogeneous, distinguish between pure and impure substances using melting and boiling points, separate mixtures using different methods, appreciate the use of different methods of separating mixtures in day-to-day life. 	The learner is guided to: <ul style="list-style-type: none"> Watch signed videos/videos with captions showing mixtures (homogeneous and heterogeneous). Identifies and sign types of mixtures observed from the videos. Demonstrate an experiment on mixtures (homogeneous and heterogeneous) within the school environment. Name other examples of homogeneous and heterogeneous mixtures. Categorise different mixtures as homogeneous (uniform) and heterogeneous (non-uniform); (solid- solid, solid- liquid, liquid- liquid). Search for, and watch signed videos/captioned videos and animations on the effects of impurities on the melting point and boiling point of substances.(<i>ice, candle wax, water, and salty water</i>) Carry out, in groups, simple experiments to determine the boiling and melting points of pure and impure substances (ice, candle wax, water, and salty water). 	1. How can you classify mixtures?

			<ul style="list-style-type: none"> ● Watch signed videos/animated videos on separation of mixtures. ● Demonstrate separation of different types of mixtures as observed from the video in groups. (<i>simple distillation, filtration, and decantation, use of a magnet, sublimation, paper chromatography, solvent extraction, and crystallisation</i>) ● Discuss the methods of separation of mixtures observed in the videos. ● Make a group presentation illustrating different methods of mixture separation using charts and manilla papers. ● Discuss with peers, the applications of separating mixtures in day-to-day life (crude oil refining, fractional distillation of liquefied air, extraction of oil from nuts). 	
<p>Core competencies to be developed:</p> <ul style="list-style-type: none"> ● Communication and collaboration as learners work together in carrying out simple experiments to determine the boiling and melting points of substances. ● Digital literacy as learners search, watch and discuss videos and animations on mixtures. ● Learning to learn as learners search for more content and apply the same on mixtures. 				
<p>Pertinent and Contemporary Issues (PCIs)</p> <ul style="list-style-type: none"> ● Analytical Thinking Skills as learners carry out simple experiments to determine boiling and melting points of different substances. 		<p>Values:</p> <ul style="list-style-type: none"> ● Respect and love is enhanced as learners work harmoniously in groups while carrying out simple experiments on mixtures. ● Integrity is enhanced as learners separate mixtures and accurately report findings. 		

<ul style="list-style-type: none"> ● Social Awareness Skills as learners make new friends while working in groups and discuss various methods of separation. 	
<p>Links to other Subjects:</p> <ul style="list-style-type: none"> ● Home Science as they handle different recipes. ● Agriculture as learners apply the knowledge on separating mixtures in agricultural processes like straining milk, winnowing grains and straining honey among others. ● Social studies as learners relate traditional methods of separating mixtures to modern methods. 	
<p>Suggested non-formal activities to support learning:</p> <ul style="list-style-type: none"> ● Conducting a symposium to demonstrate mixture classification to learners from other grades within school during club and societies sessions. ● Project on application of mixtures to solve a school problem 	<p>Suggested mode of assessment:</p> <ul style="list-style-type: none"> ● Written Test ● Assessment Rubrics ● Checklist ● Anecdotal Records ● Signed Questions and Answers
<p>Suggested learning Resources:</p> <ul style="list-style-type: none"> ● Digital devices ● Course book ● Ice ● Candle wax ● Water/salty water. ● Sieve ● Magnet 	

Assessment Rubric				
Criteria	Exceeds expectation	Meets expectation	Approaches expectation	Below expectation
Classifying different types of mixtures as homogeneous and heterogeneous.	With explanations classifies different types of mixtures as homogeneous and heterogeneous	Classifies different types of mixtures as homogeneous and heterogeneous	Classifies some types of mixtures as homogeneous and heterogeneous	Attempts to classify some types of mixtures as homogeneous and heterogeneous
Distinguishing between pure and impure substances using melting and boiling points.	With justification, differentiate between pure and impure substances using melting and boiling points.	Distinguishes between pure and impure substances using melting and boiling points.	Distinguishes between some pure and impure substances using melting and boiling points.	With prompts, distinguish between pure and impure substances using melting and boiling points.
Separating mixtures using different methods.(simple distillation, filtration, decantation, use of a magnet, sublimation, paper chromatography, solvent extraction, crystallisation)	With explanation, separate mixtures using all eight methods.	Separates mixtures using all eight methods.	Separates mixtures using at most four methods.	With prompts, attempts to separate mixtures using at least two methods.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
2.0 Mixtures, Elements and Compounds	2.2 Acids, bases and indicators 16 Lessons	<p>By the end of the sub strand the learner should be able to; use plant extracts as acid-base indicator to classify solutions,</p> <ol style="list-style-type: none"> categorise different house-hold solutions as either acidic or basic using indicators in the laboratory, determine the strength of acids and bases using universal indicators in the laboratory, outline applications of acids, bases and indicators in real life, appreciate the applications of acids and bases in real life. 	<p>The learner is guided to:</p> <ul style="list-style-type: none"> Fingerspell and sign terms related to acids, bases and indicators. Watch signed /animated videos showing how plant extracts are prepared and used as indicators. Prepare and use plant extract indicators to classify common household solutions as either acidic or basic, in a group. Classify different household solutions as either acidic or basic using indicators in groups(use methyl orange, litmus or phenolphthalein). Search, watch signed videos/ videos with captions and animations showing different colors of acid- base indicators in different solutions. In groups, discuss the strength of acid and bases using universal indicators. Carry out an experiment to determine the strength of different acids and bases using universal indicators. Classify acidic or basic solutions as either strong or weak, in a group. (Use universal indicator, pH scale and pH chart). Explore applications of acids and bases (include antacid tablets, common fruits in the locality, fertilisers, liming of soil, detergents). 	<ol style="list-style-type: none"> How can you identify a substance as being acidic or basic? Why is the knowledge of strength of acids and bases significant?

<p>Core competencies to be developed:</p> <ul style="list-style-type: none"> ● Critical thinking and problem solving as learners explore applications of acids and bases. ● Creativity and imagination as learners work in groups to classify acidic or basic solutions as either strong or weak. ● Learning to learn as learners classify different household solutions as either acidic or basic. 	
<p>Pertinent and Contemporary Issues (PCIs)</p> <ul style="list-style-type: none"> ● Critical thinking as learners test for the acidity or alkalinity of soil samples for food security. ● Life skills as learners acquire knowledge on applications of acids and bases and apply it in day-to-day life. ● Safety as learners carefully handle acids and bases in the laboratory. ● Environmental conservation as learners carefully extracts plant indicators and dispose of the waste appropriately. 	<p>Values:</p> <ul style="list-style-type: none"> ● Peace, love and unity as learners classify household solutions as either acidic or basic. ● Responsibility as learners carefully pick flowers from the environment. ● Respect as learners in groups classify acidic or basic solutions as either strong or weak. ● Integrity as learners apply proper laboratory waste disposal measures.
<p>Links to other Subjects:</p> <ul style="list-style-type: none"> ● Agriculture: as learners use lime and fertilisers to improve soil fertility in day-to-day life and learn how to test for the level of acidity in the soil. ● Health Education: as learners acquire knowledge on the use of antacid to relieve stomach upsets. 	
<p>Non formal activities to support learning:</p> <ul style="list-style-type: none"> ● Agriculture clubs applying lime to farm soil to reduce acidity ● Debating clubs debating on the effects of acid on the environment 	<p>Suggested mode of assessment:</p> <ul style="list-style-type: none"> ● Question and answer ● Written questions ● Oral / signed questions ● Project assignments ● Observation
<p>Suggested learning resources:</p> <ul style="list-style-type: none"> ● Acid -basic solutions ● Universal indicator ● PH scale ● PH charts ● Internet 	

Assessment Rubric				
Criteria	Exceeds expectation	Meets expectation	Approaches expectation	Below expectation
Using plant extracts as an acid-base indicator to classify solutions	Demonstrates using plant extracts as acid-base indicators to classify solutions.	Uses plant extracts as acid-base indicator to classify solutions.	Uses plant extracts as acid-base indicator to classify some solutions.	With prompts, Uses plant extracts as acid-base indicator to classify some solutions.
Categorising different household solutions as either acidic or basic using indicators.	With justification categorises different household solutions as either acidic or basic using indicators.	Categorises different household solutions as either acidic or basic using indicators.	Categorises some household solutions as either acidic or basic using indicators.	With assistance categorises some household solutions as either acidic or basic using indicators.
Determining the strength of acids and bases.	With explanations determines the strength of acids and bases	Determines the strength of acids and bases.	Determines the strength of some acids and bases.	With assistance, determines the strength of acids and bases.
Outlining applications of acids, bases and indicators in real life (include anti-acid tablets, common fruits in the locality, fertilisers, liming of soil, detergents).	With explanations outlines six applications of acids, bases and indicators in real life.	Outlines six applications of acids, bases and indicators in real life.	Outlines at least three applications of acids, bases and indicators in real life.	With prompts, outlines at most two applications of acids, bases and indicators in real life.

STRAND 3.0: LIVING THINGS AND THEIR ENVIRONMENT

Strand	Sub Strand	Learning Outcomes	Learning Experiences	Key Inquiry Question(s)
3.0 Living Things and their Environment	3.1 Reproduction in human beings (16 Lessons)	By the end of the sub strand the learner should be able to; a) explain the menstrual cycle in human beings, b) explore the challenges related to the menstrual cycle, c) describe the process of fertilisation and implantation, d) illustrate human reproductive organs in their exercise books, e) appreciate the existence of sex-related challenges.	The learner is guided to: <ul style="list-style-type: none"> ● observe from a chart or watch a signed/animated video on the human menstrual cycle. ● Come up with signs of terms related to reproduction in human beings. ● Discuss human menstrual cycle in groups(<i>Details of hormonal control not required; only mention</i>). ● Discuss various challenges related to the menstrual cycle in groups. (<i>Include irregular periods, irregular bleeding, and pains, among other common challenges</i>). ● Illustrate the menstrual cycle using a flow chart. ● Draw and label human reproduction organs. ● Illustrate using charts digital devices to observe animations showing fertilisation and implantation (<i>movement of the sperm, fusion with the egg, formation of zygote and its implantation on uterus</i>). ● Make a group presentation on fertilisation and implantation (<i>movement of the sperm, fusion with the egg, formation of zygote and its implantation on uterus</i>) Project	<ol style="list-style-type: none"> 1. How does reproduction occur in human beings? 2. Why do human beings have challenges associated with menstruation? 3. How best can we manage issues related to the menstrual cycle?

			In groups, make a reusable sanitary towel	
<p>Core competencies to be developed:</p> <ul style="list-style-type: none"> ● Creativity and imagination as learners make improvised sanitary towels. ● Citizenship as learners appreciate the significance of protecting life from conception to birth. ● Digital literacy as learners use various digital devices in the learning of the reproductive process. ● Critical thinking and problem solving as learners make sanitary towels using locally available materials and sensitize the community on sex-related disorders. ● Self-efficacy as learners share experiences and discuss the management of challenges intersex condition and to menstruation. ● Learning to learn as learners work in groups to search for information and develop capacity to continue learning while doing projects. 				
<p>Pertinent and Contemporary Issues (PCIs):</p> <ul style="list-style-type: none"> ● Social cohesion is promoted as the learners collaborate during project work in their groups. ● Life skills/Human sexuality are developed as learners develop self-awareness and skills to guard against early pregnancies. 		<p>Values:</p> <ul style="list-style-type: none"> ● Respect is enhanced as learners embrace those with menstrual disorders and sex-related disorders. They also learn to respect others' opinions during discussions. ● Responsibility is developed as learners carefully disposes sanitary towels. ● Social justice is promoted as learners practice equity, equality and gender consideration in distribution of learning resources as well as assigning responsibilities during the learning process and as they appreciate sex-related challenges. 		
<p>Links to other learning areas:</p> <ul style="list-style-type: none"> ● Health education as learners learn about proper feeding habits during menstruation period. ● Home Science as learners learn about proper hygiene during menstruation period. 		<p>Suggested mode of assessment:</p> <ul style="list-style-type: none"> ● Project work-learners to improvise sanitary towels and display/pin them on classroom walls. ● Written questions ● Observations ● Oral/signed questions ● Peer assessment 		
<p>Non formal activities to support learning:</p> <ul style="list-style-type: none"> ● Music Festivals as they sign a songs and poems girl child and gender equity in groups ● Science Club where they can discuss about reproduction and menstrual hygiene 				
<p>Suggested learning resources about:</p> <ul style="list-style-type: none"> ● Charts ● Digital devices ● Resource personnel 				

- Charts
- Sanitary towel
- Animated videos
- Models
- Project (thick paper, a marker pen, a ruler, scissors, thin fabric (cotton is ideal), thick fabric (e.g. an old towel), a button, a needle and thread and a safety pin.)

Assessment Rubric				
Criteria	Exceeds expectation	Meets expectation	Approaches expectation	Below expectation
Explaining the menstrual cycle in human beings.	With justification explains the menstrual cycle in human beings.	Explains the menstrual cycle in human beings.	Attempts to explain the menstrual cycle in human beings.	Attempts to explain the menstrual cycle in human being with prompts
Describing challenges related to the menstrual cycle.	Describes challenges related to the menstrual cycle and cites evidence	Describes challenges related to the menstrual cycle.	Describe some of the challenges related to the menstrual cycle.	With help, describes some of the challenges related to the menstrual cycle.
Describing the process of fertilisation and implantation.	With illustrations describes the process of fertilisation and implantation.	Describes the process of fertilisation and implantation.	Attempts to describe the process of fertilisation and implantation.	With help, attempts to describe the process of fertilisation and implantation.

Strand	Sub- Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
3.0 Living Things and their Environment	3.2 Human Excretory System-Skin and Urinary System 12 Lessons	By the end of the sub-strand the learner should be able to; <ol style="list-style-type: none"> name parts of the human skin, state the functions of a human skin, illustrate parts of a human skin, identify parts of the urinary system and their functions, describe causes of kidney disorders, adopt a healthy lifestyle to promote kidney and skin health, appreciate the importance of proper care given to the human excretory system for better health. 	The learner is guided to: <ul style="list-style-type: none"> Observe a chart showing parts of the human skin. Identify and sign parts of the human skin. Draw and label parts of the human skin. Use a chart/model in groups to discuss parts and functions of human skin (<i>Hair, sweat glands and epidermis –avoid homeostatic functions of the skin</i>). Watch signed/animated videos /a chart of the human urinary system. Identify and sign parts of the human urinary system. Draw and label parts of the human urinary system. Discuss in groups parts of the urinary system (<i>External appearance of the kidney and vessels serving kidney, ureter, bladder, and urethra</i>) and make presentations using charts and manila papers. Discuss in groups the waste products excreted through the skin (salts and water) and kidneys (urine). 	<ol style="list-style-type: none"> Why is the skin important in humans? Why is excretion important to the human body? Why is proper use of cosmetics important?

			<ul style="list-style-type: none"> ● Use hand lenses to observe the external parts of the skin (<i>hair and sweat pores</i>) in groups. ● Discuss in groups the best practices/activities for skin care. ● Search for information online/print media and brainstorm on examples of cosmetics and their health effects on the human body (<i>e.g. skin lightening creams and lotions</i>). ● Brainstorm in groups on the external parts and functions of a human kidney using a chart (<i>Avoid details of the nephron and osmoregulation</i>). ● Search for information from internet enabled digital devices/ print media on the causes and prevention of kidney disorders. ● Learners are guided to discuss healthy lifestyles that promote kidney and skin health, for instance, adequate hydration. <p>Project Model of the urinary system.</p>	
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<p>Core competencies to be developed:</p> <ul style="list-style-type: none"> ● Digital literacy as learners use and manipulate various digital devices in the learning process. ● Imagination and Creativity as learners develop and carry out projects on cosmetics from available materials. ● Critical thinking and problem solving as learners use locally available materials to make cosmetics, which are not harmful to the skin. ● Self-efficacy as learners associate with others and work on activities that assist them discover their areas of strength and weaknesses thus enhancing scientific skills development. Learners understand and appreciate their unique skin characteristics. ● Learning to learn as learners develop self-awareness on healthy living to keep their skins and kidneys healthy and promote the same amongst peers and community. 	
<p>Pertinent and Contemporary Issues (PCIs)</p> <ul style="list-style-type: none"> ● Life skills as learners develop self-awareness while learning the effects of cosmetics on the skin. ● Environmental education as learners discuss the effects of cosmetics on the environment. ● Analytical thinking skills as learners improvise teaching and learning resources using locally available materials. ● Financial literacy as the learners' economical use of available resources. 	<p>Values:</p> <ul style="list-style-type: none"> ● Respect is promoted while learners are working with others in groups on projects and activities. They also learn to respect others' opinions. ● Responsibility is promoted as learners practice taking care of equipment and apparatus used in the laboratory. ● Peace and Unity are promoted by assigning specific tasks to individuals for the benefit of the whole group while carrying out project work and activities. ● Integrity is promoted by learners reporting true findings from activities and projects.
<p>Links to other Subjects:</p> <ul style="list-style-type: none"> ● Health education as learners learn about lifestyle diseases, taking care of the skin ● Home Science as learners learn about nutrition for healthy skin and kidney 	
<p>Non formal activities to support learning:</p> <p>Songs about kidney diseases during world kidney day awareness. Poems on healthy feeding habits to protect the kidney against diseases. Clubs/societies discussing cosmetics and their health effects on the human body.</p>	<p>Suggested mode of assessment</p> <ul style="list-style-type: none"> ● Written tests ● Oral/signed questions ● Practical Work ● Observation ● Assessment Rubrics ● Checklist ● Anecdotal Records

Suggested learning resources:

- Hand lens
- Charts
- Models
- Journals
- Digital devices
- Modelling clay

Assessment Rubric				
Criteria	Exceeds expectation	Meets expectation	Approaches expectation	Below expectation
Identifying parts of the human skin and their functions.	With illustrations identifies the parts of the human skin and their functions.	Identifies the parts of the human skin and their functions.	Identifies some parts of the human skin and their functions.	Attempts to identify some parts of the human skin and their functions with support.
Identifying parts of the urinary system and their functions.	With explanations identifies the parts of the urinary system and their functions.	Identifies the parts of the urinary system and their functions.	Identifies some parts of the urinary system and their functions.	Identifies some parts of the urinary system and their functions, with support.
Describing causes of kidney disorders	Describes causes of kidney disorders and cites evidence.	Describes causes of kidney disorders.	Describes some causes of kidney disorders.	With guidance, describes causes some of kidney disorders.

STRAND 4.0: FORCE AND ENERGY

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
4.0 Force and Energy	4.1 Static Electricity 12 Lessons	By the end of the sub strand the learner should be able to; a) define static charge as used in electricity, b) demonstrate the existence of static charges in objects, c) charge objects using different methods, d) demonstrate the effects of force between charged objects, e) appreciate the use of static charges in daily life.	The learner is guided to: <ul style="list-style-type: none"> ● Rub a plastic pen on the hair and bring it closer to tiny pieces of paper and note the observation. ● Rub different objects (<i>plastic, acetate, glass, polythene, ebonite, polystyrene rods</i>) with a dry cloth and test on an electroscope or tiny piece of paper to show the presence of static charges in pairs. ● Fingerspell and sign terms related to static electricity. ● Discuss and present in groups the observations made ● Discuss the meaning of static charge as used in electricity in groups. ● Observe a flow chart illustrating charging of objects by rubbing and induction. ● Charge different objects by rubbing and induction. ● Discuss in groups types of charges and make presentations. ● Show attraction and repulsion between charged objects. ● Discuss safety measures when dealing with static charges (<i>include lightning</i>). 	<ol style="list-style-type: none"> 1. How do materials get charged? 2. Why must we take safety measures when dealing with static charges
<p>Core competencies to be developed:</p> <ul style="list-style-type: none"> ● Digital literacy as the learners use digital devices to search, play and observe videos and animations. ● Self-efficacy as learners learn how to deal with static electricity in day-to-day life. ● Communication and collaboration as learners work in groups to accomplish their tasks. 				

<p>Pertinent and Contemporary Issues (PCIs)</p> <ul style="list-style-type: none"> ● Disaster Risk Reduction is promoted as learners learn about safety measures during lightning. ● Safety and security are enhanced as learners avoid dangers associated with static electricity. 	<p>Values:</p> <ul style="list-style-type: none"> ● Responsibility is enhanced as learners perform their different roles during the experiment. ● Unity is enhanced as learners perform the activities in groups.
<p>Links to other Subjects: Pre-Technical and Pre-Career as learners learn about lightning arrestors and their importance</p>	
<p>Non formal activities to support learning:</p> <ul style="list-style-type: none"> ● The Red Cross club carries out a drill on the safety measures during lightning and the importance of lightning arrestor. ● Taking part in a symposium on charging objects using different methods of static electricity. 	<p>Suggested mode of assessment:</p> <ul style="list-style-type: none"> ● Written tests ● Oral/ signed questions ● Practical Work ● Observation ● Checklist
<p>Suggested learning resources:</p> <ul style="list-style-type: none"> ● Rulers ● Papers ● Digital devices ● Glass rods ● Plastic rods ● Electroscope ● Dry cotton wool ● Silk threads ● Pitch balls 	

Assessment Rubric				
Criteria	Exceeds expectation	Meets expectation	Approaches expectation	Below expectation
Demonstrating the existence of static charges in objects	With examples, demonstrates existence of static charges in objects	Demonstrates the existence of static charges in objects	Attempts to demonstrates the existence of static charges in objects	Attempts to demonstrates the existence of static charges in objects with prompts

Charging objects using contact, induction and separation methods	With illustrations, charges objects using contact, induction and separation methods	Charges objects using contact, induction and separation methods	Charges objects using two methods	With assistance, attempts to charge objects using one method.
Demonstrating the effects of force between charged objects.	With examples, demonstrates the effects of force between charged objects.	Demonstrates the effects of force between charged objects.	Attempts to demonstrate the effects of force between charged objects.	With assistance, attempts to demonstrate the effects of force between charged objects.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
4.0 Force and Energy	4.2 Electrical Energy 12 Lessons	By the end of the sub strand the learner should be able to; identify various sources of electricity in their environment, a) set up simple electrical circuits in series and parallel using dry cells, bulbs, ammeters and voltmeters, b) classify materials as conductors and non-conductors of electricity, c) identify electrical appliances in their locality, d) demonstrate safety measures when handling electrical appliances, appreciate the use of electricity in their daily life.	The learner is guided to: <ul style="list-style-type: none"> ● Observe and identify from the pictures/drawings of various sources of electricity in their environment.(<i>hydroelectric power, geothermal, solar, wind power</i>) ● Discuss and sign sources of electricity from the observed pictures/drawings.(<i>hydroelectric power, geothermal, solar, wind power</i>) ● Observe and identify electrical components used in setting up a simple electrical circuit.(dry cells, bulbs, ammeters, connecting wires,switch and voltmeters) ● Sketch a simple electrical circuit in series and in parallel. ● Set up simple electrical circuits (<i>Series and parallel arrangement of cells and bulbs</i>), in groups and note the observations made. 	<ol style="list-style-type: none"> 1. How can you differentiate between conductors and non-conductors of electricity? 2. How can we observe safety measures when handling electrical appliances?

			<ul style="list-style-type: none"> ● Carry out experiments to classify materials as conductors and non-conductors of electricity in groups. (<i>Learners complete an open circuit with materials such as plastic, wood, rubber, and metal to determine conductors and non-conductors of electricity.</i>) ● Discuss in groups various electrical appliances in their locality. ● Look for relevant information in print media/on the internet about safety precautions to take when working with various electrical appliances. ● Identify safety measures to be observed when using electrical appliances. ● Explore uses of electricity in their environment. 	
<p>Core competencies to be developed:</p> <ul style="list-style-type: none"> ● Learning to learn as learners apply the knowledge on electricity to safely use electrical appliances. ● Digital Literacy as learners use digital devices to search and observe videos and photographs on sources of electricity. ● Citizenship as learners observe safety measures for self and others as they use electrical appliances. 				
<p>Pertinent and Contemporary Issues (PCIs) Disaster Risk Reduction as learners observe safety measures when using electrical appliances.</p>		<p>Values:</p> <ul style="list-style-type: none"> ● Unity is promoted as the learners perform the activities in groups while setting up simple electrical circuits. ● Responsibility is promoted as learners perform their different roles when setting up simple electrical circuits. 		
<p>Links to other Subjects: Pre-technical and pre-career as learners learn to set up simple electrical circuits</p>				
<p>Non formal activities to support learning:</p>		<p>Suggested mode of assessment:</p> <ul style="list-style-type: none"> ● Written Test 		

<ul style="list-style-type: none"> ● Replacing faulty bulbs and practising electricity conservation by switching off electrical appliances when not in use. 	<ul style="list-style-type: none"> ● Checklist ● Anecdotal Records ● Practical Work ● Observation Schedule
<p>Suggested learning resources</p> <ul style="list-style-type: none"> ● Charts ● Dry cell ● Bulb ● Connecting wire ● Voltmeter ● Ammeter ● Piece of wood ● Rubber ● Digital devices 	

Assessment Rubric				
Criteria	Exceeds expectation	Meets expectation	Approaches expectation	Below expectation
Identifying various sources of electricity.	With explanations identifies various sources of electricity.	Identifies various sources of electricity.	Identifies some sources of electricity.	With assistance, identifies some sources of electricity.
Setting up simple electrical circuits.	With explanations sets up simple electrical circuits.	Set up simple electrical circuits.	Attempts to set up simple electrical circuits.	With assistance, attempts to set up simple electrical circuits.
Classifying materials as conductors and non-conductors of electricity.	With explanations classifies materials as conductors and non-conductors of electricity.	Classifies materials as conductors and non-conductors of electricity.	Classifies some materials as conductors and non-conductors of electricity.	With assistance classifies some materials as conductors and non-conductors of electricity.

Identifying electrical appliances in the locality.	With explanations, Identifies electrical appliances in the locality.	Identifies electrical appliances in the locality	Identifies some electrical appliances in the locality.	With assistance, identifies some electrical appliances in the locality.
Demonstrating safety measures when handling electrical appliances	With explanations demonstrates safety measures when handling electrical appliances	Demonstrates safety measures when handling electrical appliances	Identifies some safety measures when handling electrical appliances.	With prompts, identifies some safety measures when handling electrical appliances.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
4.0 Force and Energy	4.3 Magnetism 10 Lessons	By the end of the sub strand, the learner should be able to; a) identify magnetic and non-magnetic materials within the immediate environment, b) classify materials in the environment as magnetic or non-magnetic, c) investigate the force between like and unlike poles of magnets, d) describe the uses of magnets in day-to-day life, e) appreciate the applications of magnets in day-to-day life.	The learner is guided to: <ul style="list-style-type: none"> ● Search for relevant information in print media or on the internet on the meaning of magnetic and non-magnetic materials. ● Take a walk around the school compound with a magnet, noting which items are attracted to the magnet and which are not. ● Identify and collect materials within their environment, sort and group them as magnetic and non-magnetic materials. ● Fingerspell and sign terms related to magnetism. ● Draw a bar magnet and label its poles ● Search for and watch animations showing force between like and unlike poles of magnets. ● Bring like poles(<i>North and North or South and South</i>) and unlike poles(<i>North and South</i>) of two bar magnets together and note the observations ● Make a presentation in groups on the observations made when like poles(<i>North and North or South and South</i>) 	<ol style="list-style-type: none"> 1. How do we identify magnetic materials in our environment? 2. How are magnets used in day-to-day life?

			<p>and unlike poles(<i>North and South</i>) are brought close together.</p> <ul style="list-style-type: none"> ● Discuss the uses of magnets with peers.(list electrical appliances that use magnet as a component) 	
<p>Core competencies to be developed:</p> <ul style="list-style-type: none"> ● Communication and collaboration as learners work in groups to carry out activities involving magnetism 				
<p>Pertinent and Contemporary Issues (PCIs) Environmental Education is enhanced as learners use magnets to collect and separate magnetic materials in the environment to reduce pollution.</p>		<p>Values:</p> <ul style="list-style-type: none"> ● Responsibility is promoted as learners perform their different roles when carrying out activities showing the force between like and unlike poles of magnets. ● Unity is promoted as the learners work in groups to magnetise and demagnetise materials. <p>Respect: As learners learn to respect and accept others' opinions during the discussion involving magnetism.</p>		
<p>Links to other learning areas:</p> <ul style="list-style-type: none"> ● Pre- Technical and Pre-Career as learners use magnets to classify materials in the environment as magnetic and non-magnetic ● Social Studies as they determine direction using magnetic compass 				
<p>Suggested Non formal activities to support learning: Science Club: Students demonstrate how to locate directions within the school compound using freely hung bar magnets.</p>		<p>Suggested mode of assessment:</p> <ul style="list-style-type: none"> ● Oral/ signed questions ● Practical Work ● Observation ● Assessment Rubrics ● Checklist ● Anecdotal Records ● Written tests 		
<p>Suggested Learning Resources</p> <ul style="list-style-type: none"> ● Strong bar magnets ● Bottle tops ● Nails 				

- Sticks
- Iron fillings
- Plastic materials,
- Wooden materials
- Glass
- Rubber.
- Course book

Assessment Rubric

Criteria	Exceeds expectation	Meets expectation	Approaches expectation	Below expectation
Identifying magnetic and non-magnetic materials within the immediate environment.	With justifications, identifies magnetic and non-magnetic materials within the immediate environment.	Identifies magnetic and non-magnetic materials within the immediate environment.	Identifies some magnetic and non-magnetic materials within the immediate environment.	With prompts, identifies some magnetic and non-magnetic materials within the immediate environment.
Classifying materials into magnetic and non-magnetic materials.	With explanations, classifies materials into magnetic and non-magnetic materials.	Classifies materials into magnetic and non-magnetic materials.	Classifies some materials into magnetic and non-magnetic materials.	With help classifies a few materials into magnetic and non-magnetic.
Investigating the force between like and unlike poles of magnets.	With examples, demonstrate the forces between like and unlike poles of magnets.	Investigates the force between like and unlike poles of magnets.	Attempts investigate the force between like and unlike poles of magnets.	With prompts, attempts investigate the force between like and unlike poles of magnets.
Identifying the uses of magnets.	With explanations, identifies the uses of magnets.	Identifies the uses of magnets.	Identifies some uses of magnets.	With help identifies some uses of magnets.

COMMUNITY SERVICE-LEARNING CLASS ACTIVITY

Community Service Learning (CSL) is an experiential learning strategy that integrates classroom learning and community service to enable learners reflect experience and learn from the community. The CSL project is expected to benefit the learner, the school and local community. Knowledge and skills on how to carry out a CSL project have been covered in Life Skills Education (LSE).

All learners with Hearing Impairment in Grade 7 will be expected to participate in a CSL class activity. The activity will give learners an opportunity to practise the CSL Project skills covered under LSE. This activity will be undertaken in groups where learners who are Deaf will be grouped with those who are Hard of Hearing (those with residual speech or hearing). Learners will be expected to apply the steps provided to carry out the CSL project. The activity will take the form of a whole school approach, where the entire school community will be engaged in the learning process. Teachers will guide learners with Hearing Impairment to execute a simple school based CSL class activity. This activity can be done in 4-6 weeks outside the classroom time. The duration may be adjusted accordingly to accommodate learners with hearing impairment who may require more time to implement the CSL project.

CSL Skills to be covered

Research: Learners will develop research skills as they investigate PCIs to address, ways and tools to use in collecting data, analysing information and presenting their findings.

Communication: Learners will develop effective communication skills as they engage with peers and school community members. These will include listening actively and observing keenly, asking questions, and presentation skills using varied modes.

Citizenship: Learners will be able to explore opportunities for engagement as members of the school community and provide a service for the common good.

Leadership: Learners will develop leadership skills as they take up various roles within the CSL activity.

Financial Literacy Skills: Learners will consider how to source and utilise resources effectively and efficiently.

Entrepreneurship: Learners will consider ways of generating income through innovation for the CSL class activity.

Suggested PCIs	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
Learners will be guided to consider the various PCIs provided in the subject in Grade 7 and choose one	By the end of the CSL class activity, the learner should be able to:	<ul style="list-style-type: none"> In groups, learners brainstorm on pertinent and contemporary issues in the community that need attention. 	<ol style="list-style-type: none"> How does one determine community needs? Why is it necessary to be part of a community?

<p>suitable to their context and reality.</p>	<ul style="list-style-type: none"> a) identify a problem in the school community through research; b) develop a plan to solve the identified problem in the community; c) design solutions to the identified problem; d) implement solution to the identified problem; e) share the findings to relevant actors; f) reflect on own learning and relevance of the project; g) appreciate the need to belong to a community. 	<ul style="list-style-type: none"> ● In groups, learners discuss various PCIs within the school community and identify the one that requires immediate attention giving reasons for their choice. ● In groups, learners discuss possible solutions to the identified issue and propose the most appropriate solution to the problem. ● Learners brainstorm on the resources needed for the activity and source for them. ● In groups, learners discuss different methods and tools of collecting data and determine the ones suitable for the selected project. learners with hearing impairments to be supported in preparation and selection of data collection methods and tools (questionnaires, focus group discussions and interviews). ● In groups, learners to develop appropriate tools for collecting data with the guidance of the teacher. ● In groups, learners collect data and record findings. Pair a learner who is deaf with a learner who is hard of hearing. In situations where learners cannot be paired, they should be supported by a sign language interpreter. Before realising the learners to the field, the teacher should brief the learners on social etiquette and safety. ● In groups, learners discuss their findings, develop various reporting documents and use them to report on their findings. ● Based on the research report, learners implement a project to get solutions to the identified problem (Learners to be guided to adhere to safety precautions). 	
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		<ul style="list-style-type: none"> • Learners use feedback from peers and the school community to improve on the implementation of the project. • In groups, learners discuss the successes, challenges faced while implementing the project activities and lessons learnt; write a report and share through various media to peers and the school community. • Learners reflect on how the project enhanced learning while at the same time facilitating service to the school by providing solutions to the identified issue(s). 	
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SUGGESTED MODES OF ASSESSMENT	SUGGESTED LEARNING RESOURCES
<ul style="list-style-type: none"> • Observation • Oral/signed question 	<ul style="list-style-type: none"> • Notebooks • Pens • Digital devices • Written questionnaires • Cameras • Sign language interpreter • Portfolio <p>NB; Depending on the PCI the learners choose to address, they should be guided on learning resources specific to the PCI.</p>

Assessment Rubric				
Criteria	Exceeds Expectation	Meets Expectation	Approaches Expectation	Below Expectation
Identifying a problem in the school community through research.	Identifies a problem in the school community through research and seeks for solutions.	Identifies a problem in the school community through research.	Identifies a problem in the school community.	Identifies a problem in the school community with prompts.

Planning to solve the identified problem.	Plans to solve the identified problem through generated data and support peers.	Plans to solve the identified problem.	Plans to solve the identified problem with prompts.	Plans to solve the identified problem with support.
Designing solutions to the identified problem.	Designs solutions to the identified problem using relevant strategies.	Designs solutions to the identified problem.	Designs solutions to the identified problem with guidance.	Has challenges designing solutions to the identified problem.
Implementing solution to the identified problems	Implements solution to the identified problem observing the necessary safety precautions.	Implements solution to the identified problem	Implements solution to the identified problems with guidance.	Implements solution to the identified problems with support
Sharing the findings to relevant actors	Shares the findings to relevant actors recommending sustainable solutions.	Shares the findings to relevant actors.	Shares some findings with relevant actors	Shares some findings to relevant actors with prompts.