REPUBLIC OF KENYA

MINISTRY OF EDUCATION

JUNIOR SCHOOL CURRICULUM DESIGN

INTEGRATED SCIENCE
FOR
LEARNERS WITH HEARING IMPAIREMENT
GRADE 7

KENYA INSTITUTE OF CURRICULUM DEVELOPMENT

A Skilled and Ethical Society

ISBN:

Published and printed by Kenya Institute of Curriculum Development

FOREWORD

The Government of Kenya is committed to ensuring that policy objectives for Education, Training and Research meet the aspirations of the Constitution of Kenya 2010, the Kenya Vision 2030, National Curriculum Policy 2019, the United Nations Sustainable Development Goals (SDGs) and the Regional and Global conventions to which Kenya is a signatory. Towards achieving the mission of Basic Education, the Ministry of Education (MoE) has successfully and progressively rolled out the implementation of the Competency Based Curriculum (CBC) at Pre-Primary, Primary and Junior School levels.

The implementation of Competency Based Curriculum involves monitoring and evaluation to determine its success. After the five-year implementation cycle, a summative evaluation of the primary education cycle was undertaken to establish the achievement of learning outcomes as envisaged in the Basic Education Curriculum Framework. The Government of Kenya constituted a Presidential working Party on Education Reforms (PWPER) in 2022 to address salient issues affecting the education sector. PWPER made far reaching recommendations for basic education that necessitated curriculum review. The recommendations of the PWPER, monitoring reports, summative evaluation, feedback from curriculum implementers and other stakeholders led to rationalisation and review of the basic education curriculum.

The reviewed Grade seven curriculum designs for learners with hearing impairment build on competencies attained by learners at Primary school level. Emphasis at this grade is the development of skills for exploration and making informed decision on pathways based on careers.

The curriculum designs present National Goals of Education, essence statements, general and specific expected learning outcomes for the subjects as well as strands and sub strands. The designs also outline suggested learning experiences, key inquiry questions, core competencies, Pertinent and Contemporary Issues (PCIs), values, and assessment rubric.
It is my hope that all Government agencies and other stakeholders in Education will use the designs to plan for effective and efficient implementation of the CBC.

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PREFACE

The Ministry of Education (MoE) nationally implemented Competency Based Curriculum (CBC) in 2019. Grade seven is the first grade of Junior school while Grade 9 is the final grade of the level in the reformed education structure.

The reviewed Grade seven curriculum furthers implementation of the CBC from Primary Education level. The curriculum provides opportunities for learners to focus in a field of their choice to form a foundation for further education and training and/or gain employable skills. This is very critical in the realisation of the Vision and Mission of the on-going curriculum reforms as enshrined in the Sessional Paper No. I of 2019 whose title is: *Towards Realizing Quality, Relevant and Inclusive Education and Training for Sustainable Development* in Kenya. The Sessional Paper explains the shift from a content-focused curriculum to a focus on **nurturing every learner's potential.**

Therefore, the Grade seven curriculum designs for learners with hearing impairment are intended to enhance the learners' development in the CBC core competencies, namely: Communication and Collaboration, Critical Thinking and Problem Solving, Creativity and Imagination, Citizenship, Digital Literacy, learning to Learn and Self-efficacy.

The curriculum designs provide suggestions for interactive and differentiated learning experiences linked to the various sub strands and the other aspects of the CBC. They also offer several suggested learning resources and a variety of assessment techniques. It is expected that the designs will guide teachers to effectively facilitate learners to attain the expected learning outcomes for Grade seven and prepare them for smooth transition to Grade eight. Furthermore, it is my hope that teachers will use the adapted designs to make learning interesting, exciting and enjoyable.

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ACKNOWLEDGEMENT

The Kenya Institute of Curriculum Development (KICD) Act Number 4 of 2013 (Revised 2019) mandates the Institute to develop and review (*SNE adapt*) curricula and curriculum support materials for basic and tertiary education and training. The curriculum development process for any level of education involves thorough research, international benchmarking and robust stakeholder engagement. Through a systematic and consultative process, the KICD conceptualised the Competency Based Curriculum (CBC) as captured in the Basic Education Curriculum Framework (BECF)2017, that responds to the demands of the 21st Century and the aspirations captured in the Constitution of Kenya 2010, the Kenya Vision 2030, East African Community Protocol, International Bureau of Education Guidelines and the United Nations Sustainable Development Goals (SDGs).

KICD receives its funding from the Government of Kenya to facilitate successful achievement of the stipulated 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 revised Grade seven curriculum designs for learners with hearing impairment were developed and adapted with the support of the World Bank through the Kenya Primary Education Equity in Learning Programme (KPEELP); a project coordinated by MoE. Therefore, the Institute is very grateful for the support of the Government of Kenya, through the MoE and the development partners for policy, resource and logistical support. Specifically, special thanks to the Cabinet Secretary-MoE and the Principal Secretary – State Department of Basic Education,

I also wish to acknowledge the KICD curriculum developers and other staff, all teachers, educators who took part as panelists; the Semi-Autonomous Government Agencies (SAGAs) and representatives of various stakeholders for their roles in the development and adaptation of the Grade seven curriculum designs for learners with hearing impairment. In relation to this, I acknowledge the support of the Chief Executive Officers of the Teachers Service Commission (TSC) and the Kenya National Examinations Council (KNEC) for their support in the process of developing and adapting these designs. Finally, I am very grateful to the KICD Council Chairperson and other members of the Council for very consistent guidance in the process.

I assure all teachers, parents and other stakeholders that this curriculum design will effectively guide the implementation of the CBC at Grade seven and preparation of learners with hearing impairment for transition to Grade eight.

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4	Religious Education	4
5	Integrated Science for Learners with Hearing Impairment	5
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	Total	**41**

NATIONAL GOALS OF EDUCATION

1. **Foster nationalism, patriotism, and promote national unity**

   Kenya's people belong to different communities, races and religions and should be able to live and interact as one people. Education should enable the learner to acquire a sense of nationhood and patriotism. It should also promote peace and mutual respect for harmonious coexistence.

2. **Promote social, economic, technological and industrial needs for national development**

   Education should prepare the learner to play an effective and productive role in the nation.

   a) Social Needs

   Education should instil social and adaptive skills in the learner for effective participation in community and national development.

   b) Economic Needs

   Education should prepare a learner with requisite competencies that support a modern and independent growing economy. This should translate into high standards of living for every individual.

   c) Technological and Industrial Needs

   Education should provide the learner with necessary competences for technological and industrial development in tandem with changing global trends.

3. **Promote individual development and self-fulfilment**

   Education should provide opportunities for the learner to develop to the fullest potential. This includes development of one's interests, talents and character for positive contribution to the society.

4. **Promote sound moral and religious values**

Education should promote acquisition of national values as enshrined in the Constitution. It should be geared towards developing a self- disciplined and ethical citizen with sound moral and religious values.

5. Promote social equity and responsibility

Education should promote social equity and responsibility. It should provide inclusive and equitable access to quality and differentiated education; including learners with special educational needs and disabilities. Education should also provide the learner with opportunities for shared responsibility and accountability through service Learning.

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

Education should instil in the learner appreciation of Kenya's rich and diverse cultural heritage. The learner should value own and respect other people's culture as well as embrace positive cultural practices in a dynamic society.

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

Kenya is part of the interdependent network of diverse peoples and nations. Education should therefore enable the learner to respect, appreciate and participate in the opportunities within the international community. Education should also facilitate the learner to operate within the international community with full knowledge of the obligations, responsibilities, rights and benefits that this membership entails.

8. Good health and environmental protection

Education should inculcate in the learner the value of physical and psychological well-being for self and others. It should promote environmental preservation and conservation, including animal welfare for sustainable development.

LEVEL LEARNING OUTCOMES FOR JUNIOR SCHOOL

By end of Junior 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, and spiritual and moral values for peaceful co-existence.
4. Explore, manipulate, manage and conserve the environment effectively for learning and sustainable development.
5. Practise 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 coexistence.
8. Manage pertinent and contemporary issues in society effectively.
9. Apply digital literacy skills for communication and learning.

ESSENCE STATEMENT

Integrated Science is a dynamic, collaborative human endeavour that enables use of distinctive ways of logistical valuing, thinking and working to understand natural phenomena in the biological, physical and technological world. The emphasis of science education at Lower Secondary levels is to enhance learners' scientific thinking through learning activities that involve planning, designing, measuring, observing, evaluating procedures, examining evidence, and analysing data. This is envisaged in the Kenya Vision 2030, which states in part that; "The achievement of the vision greatly depends on Science, Technology and Innovation." Equally, Sessional Paper No.1 of 2005 highlights the fact that "for a breakthrough towards industrialisation, achievement of the desired economic growth targets and social development, a high priority needs to be placed on the development of human capital through education and training by promoting the teaching of sciences and information technology." Both Sessional Paper No. 14 of 2012 and Sessional Paper 1 of 2019 equally underscore the need for sustainable basic and higher education, with an emphasis on Science, Technology and Innovation.

Integrated Science, as a learning area, is therefore expected to inculcate a scientific culture and enhance scientific literacy among learners to enable them to make informed choices in their personal lives and approach their life challenges in a systematic and logical manner. This learning area intends to enable learners to practically explore and discover knowledge within their environment and in the laboratory to allow them to understand themselves and relate with their environment through application of scientific principles and ideas. It will equip learners with the relevant basic integrated scientific knowledge, skills, values and attitudes needed for their own survival and/or career development. Concepts in Integrated Science are presented as units within which there are specific strands that build on the competencies acquired in Science and Technology at Upper Primary School level. This provides the learner with the basic requisite skills, knowledge, values and attitudes necessary for specialisation in pure sciences (Physics, Chemistry, and Biology), Applied Sciences, Careers and Technology Studies (CTS) and Technical and Engineering offered in the STEM pathway at Senior School. Integrated Science is taught through inquiry-based learning approaches with an emphasis on the 5Es: engagement, exploration, explanation, elaboration and evaluation.

The design suggests the use of visual cues such as pictures, animations, models, captioned video clips, simulations, charts, and illustrations to simplify the abstract concepts. Additional assessment methods suitable for learners with Hearing Impairment, such as the use of signed questions and observation, are included. Science and Engineering Fair has also been included as part of non-formal activities. Teachers are encouraged to come up with signs for various concepts and terminologies that could be missing in the science-specific dictionary, and to provide short and clear signed instructions or procedures when conducting experiments, demonstrations, and projects. To cater well for both categories of learners, those who are Hard of Hearing and those who are Deaf, the teacher should use proper articulation of signs with correct mouth movement when facilitating learning.

SUBJECT GENERAL LEARNING OUTCOMES

By the end of Junior 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. Practise 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.

SUMMARY OF STRANDS AND SUB STRANDS

Strands	**Sub Strands**	**Suggested Number of Lessons**
1.0 Scientific Investigation	**1.1** Introduction to Integrated Science	12
	1.2 Laboratory Safety	14
	1.3 Laboratory apparatus and instruments	16
2.0 Mixtures, Elements and Compounds	2.1 Mixtures	18
	2.2 Acids, bases and indicators	22
3.0 Living things and the Environment	3.1 Human reproductive system	16
	3.2 Human Excretory System	18
4.0 Force and Energy	4.1 Electrical Energy	18
	4.2 Magnetism	16
Total Number of Lessons		**150**

Note

The suggested number of lessons per sub strand may be less or more depending on the context.

STRAND 1.0: SCIENTIFIC INVESTIGATION

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
1.0 Scientific Investigation	**1.1 Introduction to Integrated Science (12 lessons)** ● *Components of Integrated Science as a field of study* ● *Importance of science in daily life (health, agriculture, industry, transport, food and textile and career opportunities)*	By the end of the sub strand, the learner should be able to: a) sign words related to components of integrated science, b) outline the components of Integrated Science as a field of study, c) explain the importance of Integrated Science in daily life, d) show interest in learning Integrated Science at junior school.	• In groups, learners are guided to search for the meaning and sign of the words related to components of integrated science. Ensure learners observe proper cyber ethics. • in pairs, learners are guided to fingerspell and sign words related to components of integrated science. in case a sign is lacking, the learners are guided to develop and harmonise meaningful signs for communication purposes, • in groups, learners are guided to discuss the meaning of the identified words. ensure proper seating arrangement that allows learners to have a face-to-face conversation, • in groups, learners are guided to search for information from print or	1. How is the knowledge acquired in Integrated Science useful in daily life? 2. How does connecting Integrated Science to careers help us plan for the future? 3. Why is it important to learn signs for terms related

			digital media on pathways related to integrated science at senior school. • in groups, learners are guided to engage a resource person to get more information on the importance of integrated science and take notes. provide learners with supplementary notes since they cannot watch the resource person and take notes at the same time. • in purposive groups, learners are guided to discuss the importance of scientific knowledge in daily life. ensure learners observe a proper seating arrangement that allows them to have a face-to-face conversation. • in groups, learners are guided to prepare charts and make a class presentation on the importance of scientific knowledge in daily life. **Project** • use locally available materials to construct a career chart and display the chart in classroom.	to integrated science?

Core Competencies to be developed:

- Communication and collaboration: The learner enhances signing skills while making class presentations and participating in group discussions.
- Self-efficacy: The learner develops effective communication skills as they discuss the pathways and career opportunities associated with Integrated Science and present their findings.

Values:

- Respect: The learner works harmoniously in groups as they discuss the importance of scientific knowledge in daily life.
- Unity: The learner cooperates with peers while working in groups to discuss the meaning and components of integrated science.

Pertinent and Contemporary Issues (PCIs)

- Socio-Economic and Environmental **Issues:** The learner acquired Internet Safety & Security skills while observing proper cyber ethics while conducting online searches.

Links to other subjects:

- The learner can relate the knowledge acquired from the use of computer hardware devices in **Pre-Technical studies** to identify words related to components of integrated science.

Suggested Learning Resources:

- Resource persons
- Digital Devices
- Print media (Charts, pictures, journals, magazines, Textbooks)
- Science specific signs dictionary.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
1.0 Scientific Investigation	1.2 **Laboratory Safety (14 Lessons)** ● ***C****ommon hazards and their symbols in the laboratory (flammable, corrosive, toxic, and carcinogenic, radioactive substances* ● *Common accidents in the laboratory, (cover Causes and First Aid :- burns and scalds, cuts, and ingestion of*	By the end of the sub strand, the learner should be able to: a) sign words related to common hazards and their symbols in the laboratory, b) identify common hazards and their symbols in the laboratory, c) explain causes of common accidents in the laboratory, d) demonstrate First Aid measures for common laboratory accidents, e) appreciate the importance of safety in the	• In pairs, learners are guided to search for common hazards and their symbols using print and digital media. Remind learners to observe cyber ethics while using the digital devices. • in pairs, learners are guided to identify common hazards and their symbols in the laboratory. learners who are hard of hearing are paired with deaf learners to enhance total communication and lip reading. • in pairs, learners are guided to fingerspell and sign common hazards and their symbols. pair the hard of hearing learners with the deaf to encourage total communication. • in groups, learners are guided to interpret common hazard symbols and make summary notes. • in pairs, learners are guided to draw common hazard symbols and display them in the classroom for peer review.	1. How do accidents happen in the laboratory? 2. How do symbols help in quick identification of potential dangers in the laboratory?

	harmful substances) ● *Safety measures in the laboratory*	laboratory and access to a healthy working environment.	• in groups, learners are guided to identify common accidents in the laboratory. (burns and scalds, cuts, and ingestion of harmful substances) • in purposive groups, learners are guided to discuss the causes of common accidents in the laboratory and relate the appropriate first aid measures. (burns and scalds, cuts, and ingestion of harmful substances) • in groups, learners are guided to observe a simulated demonstration on first aid procedures on common accidents in the laboratory. (burns and scalds, cuts, and ingestion of harmful substances). • in groups, learners are guided to role-play some first aid procedures for common accidents in the laboratory. • in groups, learners are guided to use print and digital devices to find safety measures in the laboratory and the general school learning environment. • learners are guided to practise safety measures in the laboratory and the general school learning environment.	

			• in purposive groups, learners are guided to discuss safety measures in the laboratory. • in groups, learners are guided to prepare charts and make a classroom presentation on safety measures in the laboratory.	

Core competencies to be developed:

- Learning to learn: The learner develops relationships while sharing learned knowledge on First Aid procedures for common accidents in the laboratory.
- Critical thinking and problem solving: The learner reflects while role-playing some First Aid procedures for common accidents in the laboratory and practises safety measures in the laboratory and the general school learning environment.

Values:

- Responsibility: The learner exercises accountability as they practise safety measures in the laboratory and the general school learning environment.
- Unity: The learner displays team spirit as they prepare charts and make a classroom presentation on safety measures in the laboratory.

Pertinent and Contemporary Issues (PCIs)

- Safety and security: The learner is aware of his or her safety and adheres to laboratory safety precautions.

Links to other subjects:

The learner is able to relate the skills on how to prevent fire in the work environment in **Pre-Technical Studies** to the prevention of common accidents in the laboratory.

Suggested Learning Resources:

- Basic Laboratory Apparatus, equipment and selected specimens
- First Aid Kit
- Science specific signs dictionary
- Print and digital media

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Scientific Investigation	**1.3 Laboratory apparatus and instruments** **(16 Lessons)** ● *Basic skills in science. (manipulative, observation, measurement, classification, prediction, communication and conclusion skills),* ● *Laboratory instruments and apparatus (for heating, measuring mass, temperature, length, volume,*	By the end of the sub strand, the learner should be able to: a) sign words related to laboratory apparatus, instruments and basic skills in science, b) describe the basic skills in science, c) use and care for apparatus and instruments in the laboratory, d) use the SI units for basic and derived quantities in science, e) appreciate consumer protection when	• In groups, learners are guided to observe displayed laboratory apparatus and instruments. • in pairs, learners are guided to fingerspell and sign the apparatus and instruments observed in the laboratory. In case a sign is missing, learners are guided to harmonise meaningful signs for communication purposes. • in groups, learners are guided to watch a captioned video on basic skills in science. in case there are no captions, the video will be accompanied by sign language interpretation. • in groups, learners are guided to fingerspell and sign basic skills in science as observed in the video. (Manipulative, observation, measurement, classification, prediction, communication and conclusion skills).	1. Why are basic skills in science important? 2. How are quantities in science expressed?

	weight, magnification and time) (*include parts, functions and care of a light microscope; and parts of a Bunsen burner*) ● *International System of Units (SI) for basic and derived quantities in science*	handling different apparatus, instruments and other materials in day-to-day life.	• in groups, learners are guided to discuss the meaning and use of basic skills in science. (manipulative, observation, measurement, *classification, prediction, communication and conclusion skills*). Ensure proper seating arrangement that allows learners to have a face-to-face conversation. • in groups, the learner is guided to observe illustrations of apparatus and instruments in the laboratory and identify them. *(for heating, measuring mass, temperature, length, volume, weight, magnification and time).* • in purposive groups, learners are guided to discuss apparatus and instruments in the laboratory and take notes. *(for heating, measuring mass, temperature, length, volume, weight, magnification and time)* (include parts and functions of a *microscope and bunsen burner*). • in groups, learners are guided to observe a simulated demonstration on	

			how to use and care for apparatus and instruments in the laboratory. • in pairs, learners are guided to practise how to use and care for apparatus and instruments in the laboratory. • in groups, learners are guided to use print and digital media to find signs of the SI units for basic and derived quantities in science. • in pairs, learners are guided to practise the signs of the SI units for basic and derived quantities in science. • in pairs, learners are guided to carry out activities on measurements of basic quantities and express them in the international system of units (SI) *(length, mass, time, electric current, temperature, amount of substance, light intensity).* • in groups, learners are guided to observe a simulated demonstration on determining derived quantities from basic units. (*area, volume, speed, density).*	

			• in groups, the learners are guided to carry out activities to determine derived quantities from basic units *(area, volume, speed, density).* • in groups, learners are guided to collect packaging with labels of quantities and discuss the importance of the information on labels.	

Core competencies to be developed:

- Learning to learn: The learner works collaboratively while practising how to handle and use apparatus and instruments in the laboratory.
- Communication and collaboration: The learner develops teamwork skills while working with peers using different apparatus and instruments to carry out laboratory experiments and activities.

Values:

- Respect: The learner appreciates others' opinions while working in groups.
- Responsibility: The learner cares for apparatus and instruments as they practise how to handle them in the laboratory.

Pertinent and Contemporary Issues (PCIs)

- Environmental Education: The learner observes cleanliness by cleaning the work tables, picking up waste papers, and disposing of them appropriately after a laboratory session.
- Safety and Security: The learner observes safety precautions to avoid injury and accidents when handling apparatus and instruments in the laboratory.

Links to other subjects:

- The learner is able to relate the skills of how to take correct measurements of ingredients and spices while preparing a balanced meal in Agriculture and Nutrition.
- The learner is able to use arithmetic skills gained in Mathematics to convert any given quantity to the appropriate SI unit.

Suggested Learning Resources:

- Course book
- Science specific signs dictionary
- Basic Laboratory Apparatus, equipment and selected specimens (including microscope)
- Digital devices

Assessment Rubrics				
Level **Indicators**	**Exceeds expectation**	**Meets expectation**	**Approaches expectation**	**Below expectation**
Ability to sign words related to laboratory apparatus and instruments.	The learner signs words related to laboratory apparatus and instruments with exceptional accuracy demonstrating signing proficiency.	The learner signs words related to laboratory apparatus and instruments accurately conveying the intended meaning clearly.	The learner signs words related to laboratory apparatus and instruments with noticeable errors and inconsistencies in articulation.	The learner signs words related to laboratory apparatus and instruments inaccurately and lack clarity in articulation.
Ability to identify common hazards and their symbols in the laboratory.	The learner identifies common hazards and their symbols in the laboratory exhaustively.	The learner identifies common hazards and their symbols in the laboratory satisfactorily.	The learner identifies most of the common hazards and their symbols in the laboratory correctly.	The learner identifies a few common hazards and their symbols in the laboratory correctly
Ability to describe First Aid measures for common laboratory accidents.	The learner describes all First Aid measures for common laboratory	The learner describes all First Aid measures for common laboratory	The learner describes most First Aid measures for common	The learner describes a few First Aid measures for

	accidents systematically and comprehensively.	accidents systematically.	laboratory accidents systematically.	common laboratory accidents.
Ability to use and care for apparatus and instruments in the laboratory.	The learner uses and cares for all apparatus and instruments in the laboratory innovatively.	The learner uses and cares for all apparatus and instruments in the laboratory.	The learner uses and cares for most of the apparatus and instruments in the laboratory.	The learner uses but cares for a few apparatus or instruments in the laboratory.
Ability to use the SI units for basic and derived quantities.	The learner uses all the SI units for basic and derived quantities correctly giving examples.	The learner uses all the SI units for basic and derived quantities correctly.	The learner uses most of the SI units for basic and derived quantities correctly.	The learner uses a few of the SI units for basic and derived quantities.

STRAND 2.0: MIXTURES, ELEMENTS AND COMPOUNDS

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
• **Mixtures, Elements and Compounds**	○ **Mixtures** • **(18 Lessons)** • H*omogeneous mixtures (solid-solid, solid-liquid, liquid-liquid and gas-gas)* • *Separation of homogeneous mixtures*	By the end of the sub-strand, the learner should be able to: • identify the signs of terminologies related to mixtures for effective communication, • separate homogeneous mixtures using appropriate method, • outline applications of separating homogeneous mixtures in day-to-day life, • appreciate the use of different methods of separating mixtures in day-to-day life.	• In groups, learners are guided to use print and digital media to find signs of terminologies related to mixtures. • in pairs, learners are guided to fingerspell and sign terms related to mixtures. In case a sign is missing, learners are guided to harmonise meaningful signs for communication purposes. • in groups, learners are guided to identify and classify mixtures at school and home. • in pairs, learners are guided to categorise the identified mixtures as homogeneous or heterogeneous. • in groups, learners are guided to watch captioned videos showing different types of mixtures. Play the video multiple times with pauses to allow the learner to take notes and for better comprehension.	• Why is the separation of mixtures important in day-to-day life? • How does a separating homogeneous mixture solve practical challenges?

	(evaporation, crystallisation, Simple distillation, fractional distillation, sublimation, solvent extraction and chromatography) • *Applications of methods of separating mixtures in real life*		• In groups learners are guided to discuss the meaning of solvent, solute and solution. • learners are guided to observe simple demonstrations on separation of mixtures. (*evaporation, crystallisation, simple distillation, sublimation, fractional distillation, solvent extraction and chromatography*) • in groups, learners are guided to carry out activities to separate homogeneous mixtures with peers. *(evaporation, crystallisation, Simple distillation, sublimation, fractional distillation, solvent extraction and chromatography).* • in groups, learners are guided to discuss the applications of separating mixtures in day-to-day life. (*crude oil refining, fractional distillation of liquefied air, extraction of salt from seawater, extraction of oil from nuts*). Ensure proper seating arrangement that allows learners to have a face-to-face conversation.	

Core competencies to be developed:

- Communication and collaboration: The learner develops teamwork skills while working with peers to identify and record different types of mixtures in school and at home.
- Learning to learn: The learner practices to learn independently while reflecting on appropriate methods of separating mixtures in day-to-day life.

Values:

- Unity: The learner shares available resources amicably with peers as they work in groups to separate mixtures.
- Integrity: The learner applies laid-down procedures when carrying out activities on how to separate homogeneous mixtures.

Pertinent and Contemporary Issues:

- Socio - economic issues (Financial Literacy): The learner appreciates the economic importance of separation of mixtures as they discuss the applications of separating mixtures in day-to-day life.

Links to other subjects:

- Social studies: The learner relates traditional methods of separating mixtures to modern methods.
- The learner is able to apply the skills used in separating honey from the honeycomb during the preparation of honey in **Agriculture and Nutrition.**

Suggested Learning Resources:

- Course book
- Science specific signs dictionary
- Basic Laboratory Apparatus and equipment
- Water
- Sieve
- Magnet
- Organic solvents
- Sample mixtures

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
2.0 Mixtures, Elements and Compounds	**2.2 Acids, bases and indicators** **(22 Lessons)** ● *Introduction to acids and bases* ● *Identification of acids and bases using a litmus paper* ● *Preparation of acid-base indicators from plant extracts* ● *Classification of commonly used substances as acids and bases using acid -base indicator from plant extract*	By the end of the sub-strand, the learner should be able to: a) sign terminologies related to acids, bases and indicators for effective communication, b) identify acids and bases using a litmus paper, c) prepare an acid-base indicator from plant extracts, d) describe the physical properties of acids and bases, e) outline applications of acids, bases and indicators in real life, a) appreciate the applications of acids and bases in real life.	• In groups, learners are guided to use print and non-print media to find meanings and signs of words related to acids, bases and indicators. Ensure learners observe proper cyber ethics while conducting online searches. • in groups, learners are guided to fingerspell and sign the identified terminologies observed from the illustration. In case a sign is missing, learners are guided to harmonise meaningful signs for communication purposes. • in pairs, learners are guided to search in print or digital media for signs of terminologies related to acids, bases and indicators. • in groups, learners are guided to observe a class demonstration on how to use litmus paper to classify acids and bases. • in pairs, learners are guided to use litmus paper to classify household	1. Why are acids and bases important? 2. How do the physical properties of acids and bases play a role in their practical applications?

	● *Physical properties of acids and bases* ● *Uses of acids, bases and indicators in real life*		solutions into acids and bases. Pair learners who are hard of hearing with deaf learners to enhance total communication. • in pairs, learners observe a step-by-step demonstration on how to prepare acid- base indicators from plant extracts, • in groups, learners are guided to carry out activities to prepare acid-base indicators from plant extracts collaboratively, • in groups, learners are guided to use acid-base indicators from plant extracts to classify common household solutions as either acidic or basic, • in groups, learners are guided to discuss the physical properties of acids and bases. Adopt a proper seating arrangement that allows learners to have a face-to-face conversation, • in groups, learners are guided to make presentations on the physical	

			properties of acids and bases as discussed in the group. Correct any mistakes made after the presentations, • in groups, learners are guided to use digital or print media to explore applications of acids and bases and present findings. Learners to observe cyber ethics. (antacid *tablets, common fruits in the locality, fertilisers, liming of soil, detergents*).	

Core competencies to be developed:

Critical thinking and problem solving: The learner develops research skills as they explore applications of acids and bases using print or digital media.

Digital Literacy: The learner develops the skill of digital citizenship as they observe cyber security measures while exploring applications of acids and bases online.

Values:

- Responsibility: The learner engages in assigned roles as they carry out activities to prepare acid-base indicators from plant extracts collaboratively.
- Respect: The learner appreciates diverse opinions of peers as they collaboratively use digital or print media to explore applications of acids and bases and present findings in plenary.

Pertinent and Contemporary Issues (PCIs)

Socio-Economic issues (Cyber Security): The learner observes cyber security measure**s** while using digital media to explore applications of acids and bases.

Links to other subjects: The learner is able to relate the knowledge of using lime to reduce soil acidity to soil conservation, a concept from Agriculture and Nutrition.
Suggested Learning Resources: ● Course book ● Science specific signs dictionary ● Basic Laboratory Apparatus, equipment and selected specimens ● Litmus papers, acids, bases, indicators.

Assessment Rubric

Level / Indicator	Exceeds expectations	Meets expectations	Approaches expectations	Below expectations
Ability to sign terms related to acids, bases and indicators.	The learner signs terms related to acids, bases and indicators with exceptional accuracy demonstrating signing proficiency.	The learner signs terms related to acids, bases and indicators accurately conveying the intended meaning clearly.	The learner signs terms related to acids, bases and indicators with noticeable errors and inconsistencies in articulation.	The learner signs terms related to acids, bases and indicators inaccurately and lack clarity in articulation.
Ability to separate homogeneous mixtures using appropriate method	The learner consistently separates all the homogeneous mixtures using appropriate methods.	The learner separates all of the homogeneous mixtures using appropriate methods	The learner separates most of the homogeneous mixtures using appropriate methods	The learner separates a few homogeneous mixtures into inappropriate methods.
Ability to identify acids and bases using litmus paper.	The learner correctly and exhaustively identifies any	The learner correctly identifies all of the provided substances as acids or bases.	The learner correctly identifies most of the provided substances as acids or bases.	The learner correctly identifies a few of the provided substances as acids or bases.

	substances as acids or bases.			
Ability to outline applications of acids, bases in real life.	The learner outlines all the applications of acids and bases exhaustively.	The learner outlines the applications of acids and bases.	The learner outlines most of the applications of acids and bases	The learner outlines a few applications of either acids or bases.

STRAND 3.0: LIVING THINGS AND THEIR ENVIRONMENT

Strand	Sub Strand	Specific learning outcomes	Suggested learning experiences	Suggested Key inquiry question
3.0 Living things and the Environment	**3.1 Human reproductive system** **(16 lessons)** ● Parts of the human reproductive system and their functions (*Male; penis, testis and urethra. Female; vagina, cervix, uterus, oviduct, and ovaries)* ***Note:*** *Detailed internal structures of testis and ovaries are not required.* ● Changes in boys and girls during adolescence and their implications	By the end of the sub strand, the learner should be able to: a) sign words related to the human reproductive system, b) identify parts of the human male and female reproductive systems, c) describe functions of parts of the male and female reproductive system, d) describe the physical changes that take place in boys and girls during adolescence, e) develop a plan to manage developmental challenges during	• In groups, learners are guided to use print and non-print media to find signs related to the human reproductive system, • in pairs, learners are guided to fingerspell and sign words related to the human reproductive system. In case a sign is missing, learners are guided to harmonise meaningful signs for communication purposes, • in groups, learners observe labelled diagrams of the human male and female reproductive systems and identify the parts, • in groups, learners are	1. What are the physical, social and emotional changes that take place during adolescence? 2. How are developmental changes managed during adolescence?

	• How to manage developmental challenges during adolescence (physical, social and emotional)	adolescence, f) appreciate that physical changes in boys and girls during adolescence have social and reproductive implications.	guided to draw a labelled diagram of the human male and female reproductive systems, • in groups, learners are guided to discuss the functions of parts of the male and female reproductive systems and make summary notes, • in groups, learners are guided to engage a resource person on management of developmental challenges during adolescence. Provide learners with summary notes after the session, • in groups, learners are guided to watch a captioned video on physical changes that take place in boys and girls during adolescence and share,	

			• in groups, learners are guided to prepare charts and deliver a class presentation on physical changes that take place in boys and girls during adolescence, • in groups, learners are guided to use print and non-print material to search for information on developmental challenges during adolescence and coping mechanisms, discuss and share with peers, • in groups, learners are guided to discuss with peers and develop a plan to manage developmental challenges during adolescence.	
Core competencies to be developed: ● Self-efficacy: The learner successfully develops a plan to manage developmental challenges during adolescence. ● Communication and collaboration: The learner contributes to group discussions on the physical changes that take place in boys and girls during adolescence.				

Values:

- Integrity The learner shows self-discipline in coping with developmental challenges during adolescence.
- Respect: The learner appreciates others as they learn about the uniqueness of their bodies.

PCIs:

Human sexuality: The learner develops the skill of self-awareness as they discuss the developmental challenges during adolescence and coping mechanisms.

Links to other Learning areas:

- The content of the reproductive system is linked to reproduction in animals in Agriculture and Nutrition.

Suggested Learning Resources:

- Print media
- Science specific signs dictionary
- Basic Laboratory Apparatus, equipment and selected specimens
- Charts on human reproductive system
- Digital devices

Strand	Sub- Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
3.0 Living Thing and their **Environment**	**3.2 Human Excretory System** **(18 Lessons)** ● *Components of the excretory system.* ● *Parts of the human skin and their functions,* ● *Parts of the urinary system and their functions (external appearance of the kidney and vessels serving kidney, ureter, bladder, urethra),*	By the end of the sub strand, the learner should be able to: a) sign the words related to the human excretory system, b) identify parts of the human skin and their functions, c) identify parts of the urinary system and their functions, d) describe causes of kidney disorders, e) develop and maintain a daily log on activities that promote skin	• In groups, learners are guided to use print media and non-print media to search for the signs of words related to the human excretory system. Learners are instructed to observe proper cyber ethics while conducting online searches. • in pairs, learners fingerspell and sign the various parts of the human excretory system. pair hard of hearing learners with deaf learners to enhance total communication. • in pairs, learners are guided to use a hand lens to observe the external parts of the skin. (*hair and sweat pores*) • in pairs, learners are guided to draw external parts of the skin and display in class for peer review. • in groups, learners are guided to watch a captioned video on the parts and functions of the human skin. (*epidermis, dermis, sweat glands, sweat duct and sweat pore –indicate position of the hair and avoid homeostatic functions of the skin*).	1. What is the role of the excretory system? 2. How can a healthy excretory system be maintained?

	• *Common kidney disorders and their causes*.	and kidney health, f) appreciate the need for a healthy lifestyle to promote kidney and skin health.	Occasionally pause the video, allowing the learner to take notes and to further elaborate on the information presented. • in groups, learners discuss the parts and functions of the human skin. (*epidermis, dermis, sweat glands, sweat duct and sweat pore –indicate position of the hair and avoid homeostatic functions of the skin*). Ensure a proper seating arrangement that allows learners to have a face-to-face conversation. • in purposive groups, learners are guided to prepare charts and deliver a class presentation on the parts and functions of the human skin. • in groups, learners are guided to discuss the waste products excreted through the skin and the lungs. (*salts and water in sweat, carbon dioxide*). • in groups, learners are guided to watch a simulated video on the parts of the urinary system. (*external appearance of the kidney, and vessels serving kidney, ureter, bladder, urethra)*	

			• in purposive groups, learners are guided to use models to discuss the external parts and functions of the human kidney (*avoid details of the nephron and osmoregulation)* • in groups, learners are guided to discuss the waste products excreted through kidneys (*urine*) and make a class presentation. Ensure proper seating arrangement to enhance total communication. • in groups, learners are guided to use print and digital media to search for information on the causes and prevention of kidney disorders. Ensure learners observe proper cyber ethics as they search for information. • In purposive groups, learners are guided to discuss and develop a daily log on activities that promote skin and kidney health. **Project.** Use locally available materials to model the urinary system.	

Core competencies to be developed:

- Communication and Collaboration: The learner acquires writing skills as they clearly record findings while searching for information on healthy lifestyles that promote kidney and skin health, record and share.
- Self-efficacy: The learner develops self-awareness skills as they study the external parts of the skin and appreciates the unique characteristics of the skin.

Values:

- **Love:** The learner appreciates and embraces their natural skin colour as they adopt a healthy lifestyle to promote kidney and skin health.
- **Unity:** The learner shares available resources with others as they study the skin and the kidney.

Pertinent and Contemporary Issues (PCIs)

- **Health promotion issues:** The learner searches for information on healthy lifestyles that promote kidney and skin health.

Links to other subjects:

- The learner improves drawing skills acquired from **Creative Arts and Sports** as they draw external parts of the human skin.
- The content on healthy lifestyles that promote kidney and skin health is linked to nutrition for healthy skin and kidneys in **Agriculture and Nutrition.**

Suggested Learning Resources:

- Basic Laboratory Apparatus, equipment and selected specimens
- Charts
- Course book
- Science specific signs dictionary
- Digital devices
- Models of the kidney

Assessment Rubrics				
Level **Indicators**	**Exceeds expectation**	**Meets expectation**	**Approaches expectation**	**Below expectation**
Ability to sign terms related to human reproductive systems.	The learner signs terms related to human reproductive systems with exceptional accuracy demonstrating signing proficiency.	The learner signs terms related to human reproductive systems accurately conveying the intended meaning clearly.	The learner signs terms related to human reproductive systems with noticeable errors and inconsistencies in articulation.	The learner signs terms related to human reproductive systems inaccurately and lack clarity in articulation.
Ability to describe functions of parts of the male and female reproductive system	The learner describes all functions of parts of the male and female reproductive system comprehensively.	The learner describes all functions of parts of the male and female reproductive system.	The learner describes most of the functions of parts of the male and female reproductive system	The learner describes a few functions of parts of the male or female reproductive system.
Ability to develop a plan to manage developmental challenges during adolescence.	The learner fully develops an innovative plan to manage	The learner fully develops a plan to manage developmental	The learner partially develops a simple plan to manage	The learner develops a sketchy plan to manage developmental

	developmental challenges during adolescence systematically.	challenges during adolescence.	developmental challenges during adolescence.	challenges during adolescence partially
Ability to identify parts of the excretory system and their functions.	The learner identifies all parts of the excretory system and their functions exhaustively.	The learner identifies all parts of the excretory system and their functions satisfactorily.	The learner identifies most parts of the excretory system and their functions	The learner identifies a few parts of the excretory system and their functions.
Ability to develop and maintain a daily log on activities that promote skin and kidney health	The learner comprehensively develops and maintains a purposeful daily log on activities that promote skin and kidney health.	The learner satisfactorily develops and maintains a daily log on activities that promote skin and kidney health	The learner partially develops and maintains a simple daily log on activities that promote skin and kidney health.	The learner partially develops and maintains a daily log on activities that promote skin or kidney health leaving out some key parts.

STRAND 4.0: FORCE AND ENERGY

Strand	Sub Strand	Specific learning outcomes	Suggested learning experiences	Suggested Key inquiry question(s)
4.0 Force and Energy	**4.1 Electrical Energy (18 lessons)** ● *Sources of electricity,* ● *Flow of electric current,* ● *Common electrical appliances,* ● *Safety measures when using electrical appliances,* ● *Use of electricity.*	By the end of the sub-strand, the learner should be able to: a) sign words related to electrical energy, b) identify sources of electricity in the environment, c) demonstrate flow of electric current using simple electric circuits, d) Identify common electrical appliances used in day-to-day life, e) identify safety measures followed when handling	• In purposive groups, learners are guided to search for meanings and signs of words related to electrical energy such as *hydro-electric power, geothermal, solar, wind power nuclear, tidal-wave, fossil fuels* using print and non-print media. • in pairs, learners practise fingerspelling and signing words related to electrical energy for peer review, • in groups, learners are guided to watch captioned videos on sources of electricity. Play the videos with pauses in between to allow them to make notes and understand	1. What are the sources of electricity? 2. How is electricity useful in day-to-day life?

		electrical appliances, f) appreciate the use of electricity in day- to-day life.	better, • in group, learners are guided to discuss and make summarised notes on sources of electricity. Ensure proper seating arrangement that allows learners to have a face-to-face conversation, • in groups, learners observe and identify displayed circuit components and are guided on how to sign each circuit component, • in pairs, learners draw circuit component symbols and display them for peer review. • In groups, learners observe a demonstration on how to use electrical apparatus to set up simple electrical circuits in series and parallel in groups. *(electrical cells, connecting wires, switch, bulb, bulb holder),*	

			• in pairs, learners are guided to use electrical apparatus to set up simple electrical circuits in series and parallel within their groups. *(electrical cells, connecting wires, switch, bulb, bulb holder).* Ensure that the learners use personal protective equipment to avoid injuries, • in groups, learners observe a simulated demonstration showing the flow of electric current in a simple electrical circuit, • in groups, learners prepare charts and make a class presentation on the flow of electric current in a simple electrical circuit. • in groups, learners perform experiments to classify materials as conductors and non- conductors of electricity, • in groups, the learners observe illustrations/ images of common	

			electrical appliances in day-to-day life and make summary notes. *(Coffee maker, blender, mixer, toaster, microwave, crockpot, rice cooker, pressure cooker, bachelor griller, stove, lamp, light bulb, lantern, torch, clothes iron, electric drill, kettle, water purifier, kitchen hood, electric guitar, vacuum cleaner, electric fan, evaporative cooler, air conditioner, oven, dishwasher, television, speaker, clothes dryer, washing machine and refrigerator,* • in purposive groups, learners discuss and identify the names and signs of common electrical appliances in day-to-day life.	

			Ensure proper seating arrangement that allows learners to have a face-to-face conversation, • in groups, learners engage a resource person to identify safety measures to follow when using electrical appliances. Provide the learners with summary notes after the session, • in groups, learners prepare charts and make a class presentation on safety measures taken when using common electrical appliances, • in groups, learners use print and digital media to explore uses of electricity in day -to-day life. Learners to observe cyber ethics while doing the search, • in groups, learners are guided to undertake a school excursion to observe	

			the practical use of common electrical appliances in day-to-day life. • **HINT:** For experiments, guide the learner to: • identify and assemble apparatus to be used in the experiment, • observe a demonstration, signed video, video with captions, or animations on how to conduct the experiment, • conduct the experiment, making observations and recording them. • in pairs or groups, discuss the observations and draw inferences from them,	

Core competencies to be developed:

● Learning to learn: The learner shares learnt knowledge as they identify and discuss safety measures to follow when using electrical appliances.

● Citizenship: The learner acquires active community life skills as they exercise responsibility to the community while discussing the sources of electricity within their locality.

Pertinent and Contemporary Issues (PCIs)

● Social economic and environmental issues: The learner exercises safety and security in the class and school environment as they identify and discuss safety measures to follow when using electrical appliances.

Values:

- Unity: The learner works harmoniously with peers as they set up simple electrical circuits in series and parallel.
- Patriotism: The learner identifies and appreciates available sources of electricity in the country.

Links to other subjects:

- The learner adheres to proper handling of electronics to avoid fire accidents, a skill acquired from **Pre-Technical Studies**, while interacting with electronic appliances found at home.

Suggested Learning Resources:

- Basic Laboratory Apparatus, equipment and selected specimens
- Resource person
- Science specific signs dictionary
- Print media
- Circuit components
- Electric appliances
- Circuit diagrams

Strand	Sub Strand	Specific learning outcomes	Suggested learning experiences	Suggested Key inquiry question(s)
4.0 Force and Energy	**4.2 Magnetism (16 lessons)** ● *Properties of a magnet,* ● *Classification of materials as magnetic or non-magnetic,* ● *Uses of magnets.*	By the end of the sub-strand, the learner should be able to: a) sign words related to magnetism, b) demonstrate the properties of a magnet, c) classify materials as magnetic or non-magnetic, d) identify the uses of magnets in day-to-day life, e) appreciate the applications of magnets in day-to-day life.	● In groups, the learners are guided to find meaning and signs of words related to magnetism. *(magnet, attract, repel, north pole, South pole)* from print and digital media. Ensure learners observe proper cyber ethics while conducting online searches, ● in pairs, learners practise fingerspelling and signing words related to magnetism, ● learners are guided to observe and manipulate different types of magnets to identify some of the common features. *(North pole and South pole)* ● in groups, learners are guided to observe a demonstration on the properties of a magnet.	1. How are magnets used in day-to-day life? 2. How does the properties of a magnet apply to everyday uses?

			(attractive and repulsive, directional, poles and magnetic strength properties), ● in groups, learners carry out activities to demonstrate properties of magnets, ● in groups, learners prepare charts and make a classroom presentation on properties of a magnet, ● in groups, learners observe a demonstration on the nature of forces between different poles of magnets. *(basic law of magnetism),* ● in pairs, the learners carry out activities to investigate the nature of force between different poles of magnets. *(basic law of magnetism),* ● in groups, learners use a permanent magnet to test different materials, sort and	

			classify them into magnetic and non-magnetic materials with peers, ● in groups, learners prepare charts and make presentations on magnetic and non-magnetic materials, ● in groups, learners use print or digital media to search for and the various applications of magnets. *(Separation of mixtures, hard drives, motors, generators/dynamos, radios & televisions, loudspeakers, sensors, microphones, refrigerators, magnetic compass, door bells, ceramic magnets used in computers, and magnets used in toys to give magic effect.)* ● in groups, learners prepare charts and make presentations on applications of magnets.	

Core competencies to be developed:

- Communication and collaboration: The learner enhances teamwork skills by recognising the values of others' ideas during discussions.
- Self-efficacy: The learner enhances effective communication skills when delivering class presentations on the assigned task.

Pertinent and Contemporary Issues (PCIs):

- Social economic and Environmental issue: The learner enhances environmental education as they use print or digital media to search for and discuss applications of magnets in separation of mixtures and hence minimising soil pollution.

Values:

- Responsibility: The learner diligently engages in assigned roles when carrying out activities to investigate the nature of force between different poles of magnets.
- Respect: The learner exercises patience with one another as they discuss the various applications of magnets in day-to-day life.

Links to other subjects:

The learner is able to relate the knowledge of compass direction from **Social Studies**, a concept that utilises the directional property of a magnet.

Suggested Learning resources:

- Basic Laboratory Apparatus, equipment and selected specimens
- Course book
- Science specific signs dictionary
- Relevant reading materials
- Digital devices

Assessment Rubrics				
Level / Indicators	**Exceeds expectation**	**Meets expectation**	**Approaches expectation**	**Below expectation**
Ability to sign terms related to electrical energy and magnetism.	The learner signs terms related to sign terms related to electrical energy and magnetism with exceptional accuracy demonstrating signing proficiency.	The learner signs terms related to sign terms related to electrical energy and magnetism accurately conveying the intended meaning clearly.	The learner signs terms related to sign terms related to electrical energy and magnetism with noticeable errors and inconsistencies in articulation.	The learner signs terms related to sign terms related to electrical energy and magnetism inaccurately with minimal clarity in articulation.
Ability to identify sources of electricity in the environment	The learner identifies all the sources of electricity in the environment exhaustively.	The learner identifies all the common sources of electricity in the environment.	The learner identifies most of the sources of electricity in the environment.	The learner identifies a few sources of electricity in the environment.
Ability to identify common electrical appliances used in day-to-day life	The learner exhaustively identifies common electrical appliances used in day-to-day life.	The learner identifies all common electrical appliances used in day-to-day life.	The learner identifies most of the common electrical appliances used in day-to-day life.	The learner identifies a few common electrical appliances used in day-to-day life.

Ability to identify safety measures observed when handling electrical appliances.	The learner identifies all safety measures observed when handling electrical appliances correctly and exhaustively.	The learner identifies all safety measures observed when handling electrical appliances correctly.	The learner identifies most of the safety measures observed when handling electrical appliances correctly.	The learner identifies a few safety measures observed when handling electrical appliances.
Ability to demonstrate the properties of a magnet.	The learner demonstrates the properties of a magnet with precision, showcasing advanced knowledge of magnet behaviour.	The learner demonstrates the properties of a magnet displaying a good grasp of magnet behaviour.	The learner demonstrates the properties of a magnet displaying a good grasp of magnet behaviour.	The learner demonstrates the properties of a magnet showing challenges in understanding magnet behaviour.
Ability to identify the uses of magnets in day-to-day life.	The learner correctly identifies all the uses of magnets in day-to-day life exhaustively.	The learner identifies all uses of magnets in day-to-day life correctly.	The learner identifies most uses of magnets in day-to-day life correctly.	The learner identifies a few uses of magnets in day-to-day life correctly.

APPENDIX 1: GUIDELINES FOR INTEGRATING COMMUNITY SERVICE LEARNING (CSL) PROJECT

Introduction

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 activity is hosted as a strand in Social Studies. The Social Studies teacher will be expected to coordinate teachers from other learning areas to carry out the integrated CSL class activity. Learners will be expected to apply knowledge, skills, attitudes and values from the different Learning Areas to undertake the integrated CSL class activity. Learners will undertake **one common** integrated class CSL activity following a 6-step milestone approach that is:

Milestone	**Description**
Milestone 1	**Problem Identification** Learners study their community to understand the challenges faced and their effects on community members.
Milestone 2	**Designing a solution** Learners create an intervention to address the challenge identified.
Milestone 3	**Planning for the Project** Learners share roles, create a list of activities to be undertaken, mobilise resources needed to create their intervention and set timelines for execution
Milestone 4	**Implementation** The learners execute the project and keep evidence of work done.

Milestone 5	**Showcasing /Exhibition and Report Writing** Exhibitions involve showcasing learners' project items to the community and reflecting on the feedback Learners write a report detailing their project activities and learnings from feedback
Milestone 6	**Reflection** Learners review all project work to learn from the challenges faced. They link project work with academic concepts, noting how the concepts enabled them to do their project as well as how the project helped to deepen learning of the academic concepts.

Assessment of CSL

Integrated Activity

Assessment for the integrated CSL activity will be conducted formatively. The assessment will consider both the process and end product. This entails assessing each of the milestone stages of the integrated CSL class activity. It will focus on 3 components namely: skills from various learning areas applied in carrying out the activity, core competencies developed and values nurtured.

APPENDIX 2: LIST OF SUGGESTED ASSESSMENT METHODS AND NON-FORMAL ACTIVITIES

Strand	Sub Strand	Suggested Assessment Methods	Suggested Non-Formal Activities
1. Scientific Investigation	1.1 Introduction to Integrated Science	• Observation • Practical Work • Assessment Rubrics • Checklist • Anecdotal Records • Written Test • Signed Questions and Answers	• Watching video tapes or documentaries on components of Integrated Science as a field of study • Signed Speeches on the importance of Integrated Science in daily life • Science and engineering fair
	1.2. Laboratory Safety	• Practical Work • Observation Schedule • Checklist	• Interacting actively with resource persons to understand issues to do with common hazards and their symbols in the laboratory. • Preparing charts, posters and slogans, First Aid safety measures for common laboratory accidents

	1.3. Laboratory apparatus and instruments	• Assessment Rubric • Practical Work • Observation Schedule • Checklist	• Writing articles in school magazines on units (SI) for basic and derived quantities in science. • Engaging resource persons in discussing basic science process skills • Engaging resource persons to talk about how to safely handle and use apparatus and instruments in the laboratory
2.0 Mixtures, Elements and Compounds	2.1 Mixtures	• Written Test • Assessment Rubrics • Checklist • Anecdotal Records • Signed Questions and Answers	• Organising and participating in exchange programmes / field trips to distinguish between pure and impure substances using melting and boiling points

	2.2 Acids, bases and indicators	• Assessment Rubrics • Checklist • Signed Questions and Answers • Written Test	• Engaging resource persons on how to use plant extracts as acid-base indicator. • Science and engineering fair
	2.3.Solid–Liquid Mixture separation	• Practical Work • Observation Schedule • Checklist	• Inviting a resource person to talk about different methods of separating mixtures in day-to-day life • Conducting debates during club meetings on separate mixtures using different methods • Science and engineering fair

3.0 Living Things and their Environment	3.1 Reproduction in human beings	• Observation • Practical Work • Assessment Rubrics • Checklist • Anecdotal Records • Written Test • Signed Questions and Answers	• Engaging in straight talk on reproduction in human beings. • Engaging a resource person to elaborate on reproduction in human beings
	3.2 Human Excretory System-Skin and Kidneys	• Practical Work • Assessment Rubrics • Checklist • Anecdotal Records • Written Test	• Conducting document analysis on human Excretory System-Skin and Kidneys • Holding discussions on causes of kidney disorders. • Inviting a resource person to discuss on how to adopt a healthy lifestyle to promote kidney and skin health.

4.0 Force and Energy	4.2 Electrical Energy	• Written Test • Assessment Rubrics • Checklist • Anecdotal Records • Practical Work • Observation Schedule	• Initiating projects on how to set up simple electrical circuits in series and parallel using dry cells, bulbs, ammeters and voltmeters. • Writing articles in school magazines on safety measures when handling electrical appliances
	4.3 Magnetism	• Portfolio • Written Test • Observation Schedule • Assessment Rubrics • Checklist • Anecdotal Records • Practical Work	• Engaging resource persons to discuss uses of magnets in day-to-day life • Organising and participating in exchange programmes to identify force between like and unlike poles of magnets