KENYA INSTITUTE OF CURRICULUM DEVELOPMENT

A Skilled and Ethical Society

JUNIOR SCHOOL CURRICULUM DESIGN

INTEGRATED SCIENCE

GRADE 7

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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 the wake of rapid modernisation. 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 recognises 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.

iii) Promote individual development and self-fulfilment

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.

iv) 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.

v) 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.

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

Education should instil 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.

vii) 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.

LESSON ALLOCATION AT JUNIOR SCHOOL

S/No	Learning Area	Number of Lessons
1.	English	5
2.	Kiswahili / Kenya Sign Language	4
3.	Mathematics	5
4.	Religious Education	4
5.	Social Studies	4
6.	Integrated Science	5
7.	Pre-Technical Studies	4
8.	Agriculture and Nutrition	4
9.	Creative Arts and Sports	5
	Pastoral /Religious Instructional Program	1
Total		**40 + 1**

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, 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 co-existence.

8. Manage pertinent and contemporary issues in society effectively.
9. Apply digital literacy skills for communication and learning.

ESSENCE STATEMENT

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 Junior School level 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 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 knowledge, skills, 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.

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 the use of scientific knowledge, skills, principles and practices in everyday life.
8. Apply acquired scientific knowledge, skills, principles and practices in everyday life.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
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) outline the components of Integrated Science as a field of study, b) explain the importance of science in daily life, c) show interest in learning Integrated Science at junior school.	**The learner is guided to:** ● brainstorm on the components of Integrated Science, ● use digital or print media to search for more information on components of integrated science and share with peers, ● discuss the importance of science in daily life, ● search for information from print or digital media on pathways related to Integrated Science at Senior School, **project** use locally available materials to construct a career chart and display.	How is the knowledge acquired in Integrated Science useful in daily life?

Core competencies to be developed:

- **Communication and collaboration**: The learner develops speaking skills as they discuss the importance of science in daily life.
- **Self-efficacy:** The learner develops effective communication skills as they brainstorm on the components of Integrated Science.

Values:

- **Respect:** The learner works harmoniously in groups as they discuss the importance of scientific knowledge in daily life.
- **Unity:** The learner cooperates while working in groups as they brainstorm on th e components of Integrated Science.

STRAND 1.0: SCIENTIFIC INVESTIGATION

Pertinent and Contemporary Issues (PCIs) ● **Socio-Economic Issues - cyber security:** The learner observes cyber security as they search for information on the internet using the digital devices in o
Link to other learning area : ● Content on importance of science to career pathways is linked to Pre-technical Studies

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, carcinogenic, and radioactive substances)* ● *Common accidents in the laboratory, (cover Causes and First Aid :-burns and scalds, cuts, and ingestion of harmful substances)* ● *Safety measures in the laboratory*	By the end of the sub strand, the learner should be able to: a) identify common hazards and their symbols in the laboratory, b) explain causes of common accidents in the laboratory, c) demonstrate First Aid measures for common laboratory accidents, d) appreciate the importance of safety in the laboratory and access to a healthy working environment.	The learner is guided to: ● brainstorm on common hazards and their symbols, ● discuss causes of common laboratory accidents and their related first aid measures, ● role-play some First Aid procedures for common accidents in the laboratory, ● practice safety measures in the laboratory and the general school learning environment, ● practice laboratory wastes management ● discuss the importance of safety measures in the laboratory, ● use digital or print media to search for information on laboratory safety procedures.	1. How do accidents happen in the laboratory? 2. What safety measures should be considered while working in the laboratory?
Core competencies to be developed: ● **Learning to learn:** The learner develops relationships while role-playing some 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.
Pertinent and Contemporary Issues (PCIs) ● **Socio economic issue**: The learner practises safety precautions in the laboratory.
Link to other learning areas: ● Content on causes of common laboratory accidents and related first aid measures is linked to accidents and first aid procedures in Home Science

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 ● International System of Units	By the end of the sub strand, the learner should be able to: a) describe the basic skills in science, b) use and care for apparatus and instruments in the laboratory, c) use the SI units for basic and derived quantities in science, d) appreciate consumer protection when handling different apparatus, instruments and other materials in day to day life.	The learner is guided to: ● discuss the use of basic skills in science, ● practice use and care for apparatus and instruments in the laboratory,*(for heating, measuring mass, temperature, length, volume, weight, magnification and time)* (*include parts, functions and care of a light microscope; and parts of a bunsen burner*) ● 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),* ● carry out activities to determine derived units from basic units *(area, volume, speed, density),* ● collect packaging featuring labels of quantities and discuss the importance of the information on labels.	1. Why are basic skills in science important? 2. How are quantities in science expressed?

	(SI) for basic and derived quantities in science			

Core competencies to be developed:

- **Learning to learn:** The learner reflects on their own work as they practise how to use and care for apparatus and instruments in the laboratory.
- **Communication and collaboration:** The learner develops teamwork as they collect packaging featuring labels of quantities and discuss the importance of the information on labels

Values:

● **Respect:** The learner appreciates others' opinions while working in groups as they discuss the use of basic skills in science, **Responsibility**: The learner cares for apparatus and instruments as they practise how to care and use them in the laboratory.

Pertinent and Contemporary Issues (PCIs)

- **Socio economic issues:** The learner appropriately disposes off any broken equipment as they practise use and care for apparatus and instruments in the laboratory,

Link to other learning areas:

● The content on manipulative and measurement skills is linked to measurements of ingredients when preparing meals in Agriculture and Nutrition. ● The content on measurement skills is linked to measurements of various quantities in Mathematics.

Suggested Assessment Rubric

Levels Indicator	Exceeds expectations	Meets expectations	Approaches expectations	Below expectations
Ability to explain the importance of science in daily life,	Explains the importance of science in daily life extensively,	Explains the importance of science in daily life	Explains the importance of science in daily life partially	Explains the importance of science in daily life partially with prompts
Ability to identify common hazards and their symbols in the laboratory	Identifies common hazards and their symbols in the laboratory consistently	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
Ability to demonstrate First Aid measures for common laboratory accidents	Demonstrates First Aid measures for common laboratory accidents consistently	Demonstrates First Aid measures for common laboratory accidents	Demonstrates some First Aid measures for common laboratory accidents	Demonstrates some First Aid measures for common laboratory accidents with assistance
Ability to use and care for apparatus and instruments in the laboratory,	Uses and cares for apparatus and instruments in the laboratory correctly and accurately	Uses and cares for apparatus and instruments in the laboratory correctly	Uses and cares for some apparatus and instruments in the laboratory	Uses and cares for some apparatus and instruments in the laboratory with assistance

STRAND 2.0: Mixtures, Elements and Compounds

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
2.0 Mixtures, Elements and Compounds	**2.1 Mixtures** **(18 Lessons)** ● Homogeneous mixtures *(solid-solid, solid-liquid, liquid-liquid and gas-gas)* ● Separation of homogeneous mixtures *(evaporation, crystallisation, Simple distillation, fractional distillation, sublimation, solvent extraction and chromatography)* ● Applications of methods of separating mixtures in real life	By the end of the sub-strand, the learner should be able to: a) separate homogeneous mixtures using appropriate methods, b) outline applications of separating homogeneous mixtures in day to day life, c) appreciate the use of different methods of separating mixtures in day-to-day life.	**The learner is guided to:** ● identify and record mixtures at school and home in groups, ● categorise the identified mixtures as homogeneous or heterogeneous, ● discuss meaning of the terms solvent, solute and solution, ● carry out activities to separate homogeneous mixtures with peers, ● discuss the applications of separating mixtures in day to day life, ● where possible use digital devices to observe fraction distillation as a method of separating a mixture of water and ethanol.	How is the separation of mixtures important in day to day life?

Core competencies to be developed:

- **Communication and collaboration**: The learner works with peers to identify and record different types of mixtures in school and at home.
- **Learning to learn**: The learner practices to learn independently as they use appropriate methods of separating mixtures in day to day life.

Values:

- **Unity:** The learner cooperates with peers as they work in groups to separate 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

Link to other learning area:

● **Social studies:** The learner relates traditional methods of separating mixtures to modern methods.

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
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* ● *Physical properties of acids and bases* ● *Uses of acids, bases and indicators in real life*	By the end of the sub-strand, the learner should be able to: a) identify acids and bases using a litmus paper, b) prepare an acid-base indicator from plant extracts, c) describe the physical properties of acids and bases, d) outline applications of acids, bases and indicators in real life, e) appreciate the uses of acids and bases in real life.	**The learner is guided to:** ● use litmus paper to classify household solutions into acids and bases, ● Carry out activities to prepare acid-base indicators from plant extracts, and dispose of laboratory waste responsibly. ● use acid-base indicator from plant extracts to classify common household solutions as either acidic or basic, ● carry out activities to investigate the physical properties of acids and bases, ● where possible use digital or print media to explore applications of acids and bases and present findings.	Why are acids and bases important?

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.

Self-Efficacy: The learner develops self-awareness as they explore applications of acids and bases and present findings.
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 (environmental education):** The learner carries out activities to prepare acid-base indicators from plant extracts, and dispose of laboratory waste responsibly.
Link to other learning area: ● **Agriculture and Nutrition:** The content on acids and bases is linked to testing soil acidity and application of lime and fertilisers to improve soil fertility and pH in.

Assessment Rubric				
Indicator/Level	**Exceeds expectations**	**Meets expectations**	**Approaches expectations**	**Below expectations**
Ability to separate homogeneous mixtures using appropriate method	Separates all the suggested homogeneous mixtures using appropriate methods	Separates most of the suggested homogeneous mixtures using appropriate methods	Separates some of the suggested homogeneous mixtures using appropriate methods	Separates homogeneous mixtures using inappropriate method

Ability to identify acids and bases	Correctly identifies all the provided substances as acids or bases	Correctly identifies most of the provided	Correctly identifies some of the provided substances as acids or bases	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	correctly outlines all the applications of acids and bases	correctly outlines most of the applications of acids and bases.	correctly outlines some of the applications of acids and bases.	correctly 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(s)**

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.*	By the end of the sub strand, the learner should be able to: a) identify parts of the human male and female reproductive systems, b) describe functions of parts of the male and female reproductive system, c) describe the physical changes that take place in boys and girls during adolescence, d) develop a plan to manage	Learners is guided to: ● use charts and other print materials to observe and identify parts of the human male and female reproductive systems, ● discuss the functions of parts of the male and female reproductive systems and share, ● use print and non-print material to search for information on physical changes that take place in boys and girls during adolescence and share, ● use print and non-print material to	1. What are the physical, social and emotional changes that take place during adolescence? 2. How are developmental changes managed during adolescence?
	● Changes in boys and girls during adolescence and their implications ● How to manage developmental challenges during adolescence (physical, social and emotional)	developmental challenges during adolescence, e) appreciate that physical changes in boys and girls during adolescence have social and reproductive implications.	search for information on developmental challenges during adolescence and coping mechanisms, discuss and share with peers, ● 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.
Link to other Learning areas: ● The content on the reproductive system is linked to reproduction in animals in Agriculture and Nutrition.

Strand	**Sub- Strand**	**Specific Learning Outcomes**	**Suggested Learning Experiences**	**Suggested Key Inquiry Question(s)**

3.0 Living Things and 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),* **Note:** *avoid details of the nephron and osmoregulation* ● Common kidney disorders and their causes	By the end of the sub strand, the learner should be able to: a) identify parts of human skin and their functions, b) identify parts of the urinary system and their functions c) describe causes of kidney disorders, d) develop and maintain a daily log on activities that promote skin and kidney health, e) appreciate the need for a healthy lifestyle to promote kidney and skin health.	The learner is guided to: ● use a hand lens to observe the external parts of the skin (*hair and sweat pores*), ● use a chart or model to discuss on 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*), ● search for information on the waste products excreted through the skin (excess *salts and water in sweat)*, lungs (*carbon dioxide*) and kidneys (excess *salts and water in urine*), ● discuss parts of the urinary system use locally available materials to model the urinary system, ● use charts/models/animations to discuss the external parts and functions of the human kidney, ● use print and non-print materials to search for information on the causes and prevention of kidney disorders, ● search for information on healthy lifestyles that promote kidney and skin health, record and share, ● discuss and develop a daily log on activities that promote skin and kidney health.	1. What is the role of the excretory system? 2. How can a healthy excretory system be maintained?
Core competencies to be developed: ● **Communication and Collaboration**: The learner clearly records and shares information on healthy lifestyles that promote kidney and skin health. ● **Self-efficacy:** The learner successfully develops a daily log on activities that promote skin and kidney health.				

Values: ● **Love:** The learner appreciates and embraces their natural skin as they develop and maintain a daily log on activities that promote skin and kidney 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.
Link to other learning areas: ● 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 Assessment Rubric				
Levels **Indicator**	**Exceeds expectation**	**Meets expectation**	**Approaches expectation**	**Below expectation**
Describing functions of parts of the male and female reproductive system	Describes functions of parts of the male and female reproductive system precisely	Describes functions of parts of the male and female reproductive system	Describes functions of parts of the male and female reproductive system partially	Describes functions of parts of the male and female reproductive system partially with prompts
Developing a plan to manage developmental challenges during adolescence	Develops an innovative plan to manage developmental challenges during adolescence	Develops a plan to manage developmental challenges during adolescence	Develops a simple plan to manage developmental challenges during adolescence	Develops a sketchy plan to manage developmental challenges during adolescence
Identifying parts of the excretory system and their functions	Identifies parts of the excretory system and their functions comprehensively	Identifies parts of the excretory system and their functions	Identifies parts of the excretory system and their functions partially	Identifies parts of the excretory system and their functions partially with prompts
Developing and maintain a daily log on activities that promote skin and kidney health	Develops and maintains a purposeful daily log on activities that promote skin and kidney health	Develops and maintain a daily log on activities that promote skin and kidney health	Develops and maintain a simple daily log on activities that promote skin and kidney health	Develops and maintain a haphazard daily log on activities that promote skin and kidney health

STRAND 4.0: FORCE AND ENERGY

Strand	Sub Strand	Specific learning outcomes	Suggested learning experiences	Key inquiry question(s)
4.0 Force and Energy	**4.1 Electrical Energy (18 lessons)** • Sources of electricity in the environment • Flow of electric current using simple electric circuits • Common electrical appliances used in day to day life • Safety measures followed while using electrical appliances • Use of electricity in	By the end of the substrand, the learner should be able to: a) identify sources of electricity in the environment, b) demonstrate flow of electric current using simple electric circuits, c) identify common electrical appliances used in day to day life, d) identify safety measures observed when handling electrical appliances, e) appreciate the use of electricity in day to day life.	The learner is guided to: ● discuss in groups the sources of electricity in the environment, ● use print or digital media to search for more information on sources of electricity in nature (*hydroelectric power, geothermal, solar, wind power nuclear, tidal-wave, fossil fuels, biomass, natural gas, electrical cells),* ● use electrical apparatus to set up simple electrical circuits in series and in parallel *(electrical cells, connecting wires, switch, bulb, bulb holder)* ● perform experiments to classify materials as either conductors or non-conductors of electricity, ● discuss and identify common electrical appliances used in day to day life *(pressure cooker, electric cooker, electric blender, electrical lamp and torch, electric iron box, electric kettle, electric guitar, electric fan, air conditioner, electric oven, television, electric speaker, washing machine and electric refrigerator.),* ● identify and discuss safety measures observed when using electrical appliances, ● explore uses of electricity in day to day life, ● use digital or print media to search for more information on electrical appliances and safety measures observed when using them.	1. What are the sources of electricity in the environment? 2. How is electricity used in day to day life?

	day to day life.			

Core competencies to be developed:

- **Learning to learn:** The learner shares learnt knowledge as they use digital or print media to search for more information on electrical appliances and safety measures observed when using them.
- **Citizenship:** The learner exercises responsible use of the different sources of electricity within their locality.

Pertinent and Contemporary Issues (PCIs)

- **Social economic 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 practises dedication in setting up simple electrical circuits in series and parallel while working in groups.

Link to other Learning Area:

- **Pre-technical and Business Studies:** The learner relates concepts developed in electrical energy in setting up simple electrical circuits.

Strand	Sub Strand	Specific learning outcomes	Suggested learning experiences	Key inquiry question(s)

4.0 Force and Energy	**4.2 Magnetism (16 lessons)** • Properties of a magnet • Materials as magnetic or non-magnetic • Uses of magnets in day-to-day life • Applications of magnets in day-to-day life	By the end of the sub-strand, the learner should be able to: a) demonstrate the properties of a magnet, b) classify materials as magnetic or nonmagnetic, c) identify the uses of magnets in day-to-day life, d) appreciate the applications of magnets in day-today life.	The learner is guided to: ● carry out activities to demonstrate properties of a magnet *(attractive and repulsive, directional, poles and magnetic strength properties),* ● carry out activities to investigate the nature of force between different poles of magnets *(basic law of magnetism),* ● use a permanent magnet to test different materials, sort and classify them into either magnetic or non-magnetic materials, ● discuss the applications of magnets in day to day life *(separation of mixtures, radios, speakers, refrigerator door, magnetic compass and magnets used in toys to give magic effect),* ● use digital or print media to search for more information on applications of magnets in day to day life.	How are magnets used in day-to-day life?

Core competencies to be developed:

- **Communication and collaboration**: The learner develops communication skills as they discuss the applications of magnets.
- **Self-efficacy**: The learner manages assigned tasks by attentively using a permanent magnet to test different materials, sort and classify them into magnetic and non-magnetic materials.

Pertinent and Contemporary Issues (PCIs):

- **Social economic Issue**: The learner enhances environmental education as they use a permanent magnet to test different materials, sort and classify them into either magnetic or non-magnetic materials.

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.

Link to other Learning Areas:

- **Social Studies:** The learner links the concept of magnetism to determine direction using magnetic compass.

Suggested Assessment Rubrics

Indicators	**Exceeds expectation**	**Meets expectation**	**Approaches expectation**	**Below expectation**
Ability to identify sources of electricity in the environment	Identifies sources of electricity in the environment extensively	Identifies sources of electricity in the environment sufficiently	Identifies some sources of electricity in the environment	Identifies some sources of electricity in the environment with prompt
Ability to identify common electrical appliances used in day to day life	Identifies common electrical appliances used in day to day life extensively	Identifies common electrical appliances used in day to day life sufficiently	Identifies some common electrical appliances used in day to day life	Identifies some common electrical appliances used in day to day life with prompts

Ability to identify safety measures observed when handling electrical appliances.	Extensively identifies safety measures observed when handling electrical appliances.	Sufficiently identifies safety measures observed when handling electrical appliances.	Identifies some safety measures observed when handling electrical appliances correctly	Identifies some safety measures observed when handling electrical appliances with prompt
Ability to demonstrate the properties of a magnet.	Demonstrates the properties of a magnet correctly and consistently	Demonstrates the properties of a magnet correctly	Demonstrates the properties of a magnet partially	Demonstrates some properties of a magnet with prompt
Ability to identify the uses of magnets in dayto-day life.	Identifies the uses of magnets in day-to-day life extensively	Identifies the uses of magnets in day-to-day life sufficiently	Identifies some of the uses of magnets in day-to-day life correctly	Identifies the uses of magnets in day-to-day life superficially with prompt

APPENDIX: LIST OF ASSESSMENT METHODS, LEARNING RESOURCES AND NON-FORMAL ACTIVITIES

Strand	**Sub Strand**	**Suggested Assessment Methods**	**Suggested Learning Resources**	**Suggested Non-Formal Activities**
Scientific Investigation	Introduction to Integrated Science	• Observation • Practical Work • Assessment Rubrics • Checklist • Anecdotal Records • Written Test	Course book Library	• Watching video tapes on components of Integrated Science as a field of study • Oral Speeches on the importance of Integrated Science in daily life

		• Oral Questions and Answers		
	1.2.Laboratory Safety	• Practical Work • Observation Schedule • Checklist	• Science Kit • Basic Laboratory Apparatus, equipment and selected specimens • SEPU Kit • First Aid Kit • Internet • Library	• 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	• Course book • SEPU Kit • Basic Laboratory Apparatus, equipment and selected specimens (including microscope)	• 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 • Oral Questions and Answers	• Course book • Basic Laboratory Apparatus, equipment and selected specimens • Ice • Candle wax • Water/salty water. • Sieve • magnet	• 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 • Oral Questions and Answers • Written Test	• Course book • Basic Laboratory Apparatus, equipment and selected specimens • Universal indicator, pH scale and pH chart • Antacid tablets, common fruits in the locality,	• Engaging resource persons on how to use plant extracts as acidbase indicator.

			fertilisers, liming of soil, detergents	
	2.3. Solid–Liquid Mixture separation	• Practical Work • Observation Schedule • Checklist	• Basic Laboratory Apparatus, equipment and selected specimens • Portfolio and file • Course book	• 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
3.0 Living Things and their Environment	3.1 Reproduction in human beings	• Observation • Practical Work • Assessment Rubrics • Checklist • Anecdotal Records • Written Test • Oral Questions and Answers	• Charts • Course book • Basic Laboratory Apparatus, equipment and selected specimens	• Engaging in straight talk on reproduction in human beings. • Engaging a resource person to talk about reproduction in human beings
	3.2 Human Excretory System-Skin and Kidneys	• Practical Work • Observation	• Basic Laboratory Apparatus, equipment and selected specimens	• Conducting document analysis on human Excretory System-Skin and Kidneys

		• Oral Questions and Answers • Assessment Rubrics • Checklist • Anecdotal Records • Written Test	• Charts • Salts and water • Course book	• Holding discussions on causes of kidney disorders • Inviting a resource person to talk about 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	• Basic Laboratory Apparatus, equipment and selected specimens • Course book	• 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	• Basic Laboratory Apparatus, equipment and selected specimens • Course book	• Engaging resource persons to discuss uses of magnets in day-today life • Organising and participating in exchange programmes to identify

		• Assessment Rubrics • Checklist • Anecdotal Records • Practical Work		force between like and unlike poles of magnets

GUIDELINES FOR INTEGRATING CSL AT JUNIOR SCHOOL

Guidelines for Grade 7 Community Service-Learning 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.