SCIENCE AND ELEMENTARY TECHNOLOGY SYLLABUS

UPPER PRIMARY (P4-P6)

KIGALI, 2026

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FOREWORD

The Rwanda Basic Education Board (REB) is honoured to present the second edition of the Upper Primary Science and Elementary Technology syllabus (P4–P6). This syllabus serves as an official guide to competence-based teaching and learning, providing coherence and consistency in the delivery of quality basic education across the country. Developed through the collective expertise of subject specialists, educators, and curriculum developers, it stands as a key resource in advancing the Competence-Based Curriculum (CBC) and reflects Rwanda's continued commitment to nurturing knowledge, skills, values, and positive attitudes among learners.

Quality basic education is the foundation for Rwanda's sustainable development and prosperity. In line with the country's education philosophy, this syllabus emphasizes critical thinking, creativity, inclusiveness, and holistic learner development. It seeks to empower young people with the competencies necessary to achieve their full potential, equipping them with relevant knowledge, practical skills, and the right attitudes and values to integrate effectively into society and seize employment opportunities in a competitive world.

Anchored in Rwanda Vision 2050 and the National Strategy for Transformation (NST2), this syllabus supports the nation's goal of building a knowledge-based economy driven by innovation, resilience, and global competitiveness. It prioritizes learner-centred pedagogy, active learning, and the practical application of knowledge to prepare pupils not only for academic success but also to become responsible, ethical, and productive citizens capable of contributing to Rwanda's continued transformation.

This syllabus reflects our determination to equip learners with 21st-century skills, foster innovation, and instill values of integrity, social responsibility, and lifelong learning. Its success depends largely on the dedication and professionalism of teachers and school leaders. We therefore call upon all educators to embrace the approaches, methodologies, and assessment strategies outlined herein with commitment and passion, transforming classrooms into dynamic spaces of curiosity, creativity, and inspiration.

On behalf of REB, I extend my heartfelt appreciation to all who contributed to the development of this syllabus. Your expertise and dedication have been instrumental in shaping a curriculum that responds to the needs of our learners and supports Rwanda's national aspirations. Together, we can ensure that education continues to be a powerful driver of our nation's development and prosperity.

Dr. MBARUSHIMANA Nelson

Director General, REB

ACKNOWLEDGEMENT

The development of this syllabus has been a collective effort that reflects the dedication, expertise, and commitment of many stakeholders. On behalf of the Curriculum, Teaching and Learning Resources Department of the Rwanda Basic Education Board (REB), I wish to express my deepest appreciation to all who contributed to the successful preparation of this Upper Primary Science and Elementary Technology syllabus (P4–P6).

Special thanks go to the subject experts, curriculum developers, teachers, and education partners whose insights, feedback, and professional contributions have been invaluable in shaping this syllabus. Your collaboration has ensured that the syllabus is not only aligned with Rwanda's Competence-Based Curriculum but also responsive to the aspirations of Vision 2050 and the National Strategy for Transformation (NST2).

We also acknowledge the invaluable support of development partners and education stakeholders who have consistently provided technical assistance in curriculum adaptation. Your partnership has greatly contributed to strengthening the quality of Rwanda's education system.

Finally, we call upon teachers, school leaders, and all education practitioners to use this syllabus with commitment and professionalism, ensuring that classrooms become vibrant learning environments that nurture knowledge, skills, values, and positive attitudes among learners. Through your dedication, this syllabus will fulfil its purpose of empowering learners to realize their full potential and contribute meaningfully to Rwanda's sustainable development.

MURUNGI Joan

Head of Curriculum, Teaching and Learning Resources Department

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1.INTRODUCTION

1.1. Background to syllabus adaptation

The adaptation of the Science and Elementary Technology (SET) syllabus for upper primary reflects Rwanda's ongoing commitment to strengthening the Competence-Based Curriculum (CBC), first rolled out in 2015. Continuous feedback from teachers, school leaders, and education partners highlighted the need for improvements in content delivery, time allocation, and responsiveness to learner needs.

This second edition incorporates the Ministerial directive to harmonize school hours to five per day and 33 weeks of learning annually and ensures greater coherence, inclusiveness, and alignment with national priorities such as *Vision 2050* and the *National Strategy for Transformation (NST2)*, which emphasize a knowledge-based economy, responsible citizenship, and sustainable development.

2. TEACHING AND LEARNING SCIENCE AND ELEMENTARY TECHNOLOGY

2.1.The rationale of teaching and learning SET

2.1.1.Science and Elementary Technology and society

Teaching Science and Elementary Technology to young children is critical for establishing a foundation for further success in science and for coping with the demands of the 21st century. Furthermore, technology education constitutes an unequalled important added value. Not only in developed countries but also in developing countries such as Rwanda, the love and interest in science and technology begins in primary school where young children tend to be more curious and motivated to learn.

The inclusion of Science and Elementary Technology in the Primary School reflects the importance of science and technology in many aspects of our daily lives, at work, at school and at home. As integrated science, it provides a

very good foundation for the study of science subjects in the post-primary setting. Most importantly, it cultivates a positive attitude towards science and provides pupils with opportunities to experience the excitement of working as a scientist.

Above all, the rationale of teaching and learning of SET is embedded in the need for pupils to have a greater awareness of the role of science and technology in everyday life. SET at primary school enables the pupil to develop competencies which have great impact on the society in general.

2.1.1.Science and Elementary Technology and pupil

Pupils have to be prepared from an early age for active and responsible citizenship. With this regard, SET strives to equip pupils to understand and situate scientific and technological developments in their cultural, environmental, economic, political and social contexts. At the center of teaching and learning of SET, hands on activities will play a key role, which in turn, should contribute significantly towards improving pupils' achievement, motivation, technological literacy and test scores.

2.2.Competences

A competence is the ability to use an appropriate combination of knowledge, skills, attitudes, values, and behaviours to accomplish a task successfully. In this syllabus, competences reflect a holistic blend of these elements, enabling learners to apply them confidently and appropriately in diverse real-life situations.

By acquiring these competences, learners become better equipped to handle challenges, make informed decisions, act responsibly, and contribute positively as active members of society. The competences are embedded in the broad subject competences, yearly objectives, and unit-specific learning comptencies. Both generic competences and basic competences must be emphasized and consistently reflected in the teaching and learning process.

Teachers are encouraged to design learning experiences that engage learners in meaningful tasks, allowing them to practice and demonstrate competences both during and at the end of the learning process.

2.2.1. Generic competences

- **Critical and problem solving skills***:* Pupils develop the ability to think broadly and objectively, evaluate their causes and consequences, and suggest peaceful and practical solutions that contribute to harmony and sustainable living in their communities.
- **Creativity and innovation***:* The acquisition of such skills will help pupils to take initiative and use imagination beyond the knowledge provided, to generate new ideas and construct new concepts.
- **Research:** This will help pupils to find answers to questions based on existing information and concepts and use it explain phenomena from gathered information.
- **Communication in official languages:** Teachers, irrespective of not being teachers of language, will ensure the proper use of the language of instruction. This will help learners develop the capacity to communicate clearly, confidently, and respectfully in both spoken and written forms. By using appropriate vocabulary and structures in social, economic, political, religious, and cultural contexts, they engage in meaningful dialogue, debates, and discussions that promote coherent and logical exchange of ideas.
- **Cooperation, interpersonal management and life skills**: This competence helps learners to work collaboratively with others, respect diverse opinions, and demonstrate empathy in group tasks. It also cultivates positive moral values, responsibility, and participation in practical activities such as environmental protection, health promotion, community service and responding creatively to the variety of challenges encountered in life.
- **Lifelong learning**: Learners cultivate curiosity and adaptability by linking classroom knowledge to real-life experiences. This equips them with the ability to update knowledge and skills independently, cope with evolving societal needs, and pursue personal growth and continuous development.

2.2.2. Science and Elementary Technology broad competences

The teaching of Science and Elementary Technology to pupils for primary school aims to:

- develop an interest in science as a body of knowledge and methods of thinking, inquiring and working,
- develop a concern for the world around us,
- make children aware of themselves within the world we live and the importance of science in relation to this,
- help children realize the importance of technology for society and the need for scientific knowledge to understand the present technological age,
- Develop positive attitudes, practical skills and basic scientific concepts.

The overall objective of learning SET at primary level is to promote basic scientific literacy. Upon completion of primary education, pupils will have acquired competences (knowledge, skills and attitudes) which will enable them to:

- demonstrate an understanding of the nature of science,
- apply inquiry-based science learning strategies,
- solve problems in their daily life,
- reflect good habits of personal hygiene and their surroundings,
- practice good habits to protect their own health and that of others,
- reflect a positive attitude towards environmental protection and conservation,
- improve crop and animal husbandry,
- demonstrate an understanding of the interrelationship between science, society and technology,
- Perform SET learning through ICT and make based inquiry projects in the daily life.

2.2.3. Science and Elementary Technology and developing competences

National policies highlight the need to develop competences that foster higher-order thinking and guide learners

to become responsible, virtuous, and engaged citizens. These competences are built through interactive activities such as discussions, group work, presentations, role-plays, case studies, and practical problem-solving.

Through Science and Elementary Technology, learners acquire critical thinking, analytical skills, observation, research, communication, interpersonal awareness, intercultural understanding, and cooperation. These skills enable them to navigate challenges, participate responsibly in society, and express ideas, argue, and debate logically and respectfully.

Science and Elementary Technology encourages pupils to manipulate different materials and data during class experiments and to undertake project work that involve analytical and problem-solving skills directed towards innovation, creativity and research activities by pupils.

The acquired knowledge in learning Science and Elementary Technology should develop a responsible citizen who adapts to scientific reasoning and attitudes and develops confidence in reasoning independently. The pupil should show concern of individual attitudes, environmental protection and comply with the scientific method of reasoning. The scientific method should be applied with the necessary rigor, intellectual honesty to promote critical thinking while systematically pursuing the line of thought.

2.3. Values

Values are enduring beliefs, principles, and dispositions that influence how individuals think, feel, make decisions, interact with others, and apply knowledge, skills, and attitudes in different situations. Within the Competence-Based Curriculum, values provide the ethical, social, and cultural foundation for learning and responsible citizenship. The Rwanda Curriculum Framework recognizes two complementary categories of values: Curriculum Values, which guide the philosophy, design, and implementation of education, and Basic Values, which represent the moral, civic, and character attributes that pupils are expected to internalize and demonstrate in their daily lives. Together, these values shape the development of competent, responsible, self-reliant, and socially engaged citizens.

2.3.1. Curriculum Values

Excellence: Striving for the highest standards in learning, behaviour, and performance by consistently producing quality work, using feedback for improvement, and taking pride in achievement. It is reflected in accuracy, continuous growth, and encouraging excellence in others.

Aspiration and Optimism: Believing in one's potential and pursuing ambitious goals with confidence, perseverance, and a positive outlook. It involves viewing challenges as opportunities for growth and inspiring hope in oneself and others.

Equity and Inclusiveness: Valuing the dignity and worth of every individual by promoting fairness, equal participation, and opportunities for all. It is demonstrated through respect for diversity, support for others, and opposition to discrimination and exclusion.

Openness and Transparency: Acting honestly, ethically, and accountably while fostering trust and participation. It is reflected in clear communication, responsible decision-making, openness to feedback, and fairness in interactions with others.

Importance of Family, Rwandan culture and heritage: Recognizing the role of family, culture, and heritage in shaping identity, values, learning, and social development. It is demonstrated through respect for family relationships, participation in community life, and appreciation of cultural traditions and responsibilities.

Learner-centredness: Placing learners at the heart of education by recognizing their needs, interests, abilities, and experiences while promoting active engagement and ownership of learning. It is reflected in inclusive, supportive learning environments where learners participate, explore, collaborate, reflect, and take responsibility for their learning.

2.3.2. Basic Values

Dignity and Integrity: Upholding self-worth and acting consistently according to moral and ethical principles. It

is demonstrated through honesty, responsibility, respect for self and others, and doing what is right even when unsupervised.

Self-Reliance: Taking responsibility for one's learning, decisions, and wellbeing through initiative, confidence, and independent action. It involves solving problems, managing resources effectively, and making informed choices.

National and Cultural Identity: Appreciating and promoting Rwanda's heritage, values, language, traditions, and national aspirations. It is reflected in national pride, respect for cultural heritage and institutions, and commitment to unity and social cohesion.

Peace and Tolerance: Living harmoniously with others by respecting differences and resolving conflicts constructively. It is demonstrated through empathy, respectful dialogue, reconciliation, and support for peaceful coexistence.

Justice: Promoting fairness, equity, and respect for rules, rights, and responsibilities. It is reflected in impartial decision-making, ethical judgement, consistent application of rules, and opposition to unfair treatment.

Respect for Others and Human Rights: Recognizing and upholding the dignity, rights, and freedoms of every person. It is demonstrated through courtesy, active listening, inclusion, respect for diversity, and protection of the rights of others.

Solidarity and Democracy: Working collaboratively for the common good while respecting participation, shared responsibility, and collective decision-making. It is reflected in teamwork, community service, social responsibility, and respect for diverse views.

Patriotism: Demonstrating love, loyalty, and commitment to the wellbeing and development of Rwanda. It is expressed through civic responsibility, community participation, promotion of national unity, and positive representation of the country.

Hard Work: Applying consistent effort, diligence, and responsibility in pursuing goals and fulfilling duties. It is demonstrated through persistence, productive use of time, initiative, and commitment to quality outcomes.

Commitment and Resilience: Remaining dedicated to goals and continuing to make progress despite difficulties and setbacks. It is reflected in perseverance, adaptability, learning from mistakes, emotional self-control, and determination to succeed.

3. Pedagogical approach

The pedagogical approach in Science and Elementary Technology under the CBC emphasizes learner-centered, participatory, and inclusive methods that develop knowledge, skills, values, and competences for responsible citizenship. Teaching is interactive and active, engaging learners through debates, discussions, role-plays, storytelling, field visits, projects, research, case studies, and reflective activities. These approaches ensure that learning is enjoyable, personalized, and connected to real-life situations, while also fostering critical thinking, moral reasoning, and problem-solving.

3.1.Role of the teacher

Teachers act as facilitators and guides, shifting away from traditional rote instruction. They organize learners individually, in pairs, or in groups, and design purposeful tasks that promote inquiry, collaboration, and autonomy. Teachers apply pedagogical principles of progression—moving from simple to complex, concrete to abstract, and from learners' experiences to broader knowledge rooted in social, moral, and religious contexts. They integrate cross-cutting issues such as peace, gender equality, environmental conservation, health, and cultural values, while ensuring sensitivity to learners' diverse backgrounds. In Religious Education, teachers adopt an inclusive approach by presenting different faiths objectively, encouraging respect, understanding of diverse beliefs, and appreciation of moral and spiritual values.

3.2. Role of the pupil

Learners are active participants and co-creators of knowledge. Simply, it emphasizes the need for children to think about scientific activity in order to make sense of and understand the scientific concepts being introduced.

Specifically, when engaging in inquiry, pupils will describe objects and events, ask questions, construct explanations, test those explanations against current scientific knowledge, and communicate their ideas to others. In SET lesson, pupils get involved in the following activities (IAP, 2010, p. 9):

- observing and, where possible, handling and manipulating real objects;
- pursuing questions which they have identified as their own even if introduced by the teacher;
- taking part in planning investigations with appropriate controls to answer specific questions;
- using and developing skills of gathering data directly by observation or measurement and by using secondary sources;
- using and developing skills of organizing and interpreting data, reasoning, proposing explanations, making predictions based on what they think or find out;
- working collaboratively with others, communicating their own ideas and considering others' ideas;
- expressing themselves using appropriate scientific terms and representations in writing and talk;
- engaging in lively public discussions in defense of their work and explanations;
- applying their learning in real-life contexts;
- reflecting self-critically about the processes and outcomes of their inquiries.

During this reciprocal interaction, what pupils will acquire is not only content knowledge, but a number of skills including how to approach a problem, identify important resources, design and carry out hands-on investigations, analyze and interpret data, and, perhaps most importantly, recognize when they have answered the question or solved the problem (Marsha, 2000).

3.3. Inclusive and special needs education

In line with Rwanda's inclusive education policy, all learners regardless of ability have the right to access quality

education. Teachers adapt teaching methods, materials, and assessment strategies to meet diverse needs, including those of learners with disabilities. Differentiated instruction, assistive technologies, peer support, and individualized approaches are used to ensure equitable participation and achievement of learning outcomes. This inclusive approach recognizes learners' varied paces, experiences, and abilities, creating an environment where every learner can thrive.

4. Assessment approach

Assessment within the CBC is a fundamental component of the teaching and learning process. It is designed to evaluate learners' progress across knowledge, skills, attitudes, and values, while simultaneously supporting continuous learning and development. Unlike traditional models, CBC assessment emphasizes real-life problem-solving, requiring learners to apply acquired competences to complex, everyday situations.

Assessment entails the systematic collection and interpretation of evidence to measure learner performance against established standards. Beyond measuring achievement, it informs instructional improvement and provides constructive feedback to learners, parents, and educators, thereby fostering accountability and guiding educational decision-making.

4.1.Levels of assessment across terms and national examinations

To provide a comprehensive picture of learner achievement and development, assessment is conducted at multiple levels:

i. **Diagnostic**: Conducted before instruction to identify learners' prior knowledge and skills; administered at the beginning of a unit or lesson to guide teaching.

ii. **Formative / Continuous**: Carried out during the learning process to track progress and provide feedback. They are implemented continuously through quizzes, projects, class activities, and teacher observations.

iii. **Summative assessment:**

- **End Term I:** Administered after instruction to evaluate learners' achievement of Term I content. They are conducted at the end of the first term as a school-based assessment.
- **End Term II**: District-coordinated assessment designed to measure achievement of Term II content. They developed by schools and quality-checked at district level.
- **End Term III**: National assessment to evaluate mastery of the entire year's content. They are prepared, set, and moderated by NESA at the end of the third term.

National Examinations (NESA): High-stakes assessments for certification, selection, and accountability. They are administered nationally at the end of key education cycles (P6, S3, S6) under NESA's authority. This examination integrates objective questions, structured responses, and applied tasks aligned with CBC principles to holistically measure learner achievement.

Average scores from school, district, and comprehensive summative assessments will be weighted and included in the final national examination grading, initially contributing 10%, with the percentage gradually increasing as teachers gain experience and confidence in assessment practices.

4.2. Record Keeping

Accurate record keeping is essential for monitoring learner progress and informing instructional decisions. Teachers use tools such as portfolios, checklists, and report books to collect evidence of learning. Portfolios include samples of learners' work, test results, projects, and self-reflections, serving as both a record of achievement and a diagnostic tool for guiding remedial action. These records provide data for feedback to learners, teachers, and parents, and contribute to final evaluations.

4.3.Item writing in summative assessment

Summative assessment items must be valid, fair, reliable, and aligned with CBC principles. They should test a

range of competencies, including knowledge recall, application, analysis, and values integration, while reflecting real-life contexts. Item writers follow a structured process that involves:

- Identify topic areas to be tested from the subject syllabus.
- Outline subject matter content to be considered as the basis for the test.
- Identify learning outcomes to be measured by the test.
- Preparing a test blueprint or table of specifications;
- Using verbs that require higher-order thinking beyond memorization;
- Applying transparent and consistent marking schemes.
- Greater weight is given to higher-order cognitive skills as stated in the syllabus.

4.4. Structure and format of national examinations

At the completion of primary education, learners undertake a national examination designed to evaluate literacy, numeracy, and competences in core subjects. For Science and Elementary Technology, a single combined paper is administered, integrating both subject areas. The examination employs a variety of item types—such as objective questions, structured responses, and applied tasks—intended to holistically assess both subject knowledge and broader CBC competencies.

4.5.Reporting to parents

Regular communication with parents is an essential component of the CBC. This is achieved through progress reports, parent–teacher meetings, and school community activities. Since the CBC emphasizes a wide range of learning outcomes: knowledge, skills, attitudes, and competences—a single mark is insufficient to capture learner progress. Effective reporting should highlight areas where learners are excelling as well as those requiring

improvement. Using descriptive feedback or simple rating scales (e.g., meeting expectations very well, meeting expectations, not meeting expectations) across knowledge, subject-specific skills, and competences provides a clearer and more comprehensive picture than numerical grades alone. This approach fosters meaningful parental involvement and supports learners' continued growth.

5. Resources

The effective implementation of the Science and Elementary Technology syllabus requires the provision and utilization of appropriate resources. These resources include both teaching and learning materials and qualified human personnel, without which the delivery of the syllabus would be ineffective.

5.1. Materials needed for implementation of this syllabus

A variety of materials are essential to facilitate teaching and learning processes in Science and Elementary Technology. These materials provide learners with practical experiences, stimulate critical thinking, and foster the acquisition of competences. They include:

- **Textbooks and reference materials:** Up-to-date textbooks, teacher's guides, learner's books, dictionaries, and foundational religious texts such as the Bible, the Qur'an, and other relevant doctrinal sources.
- **Teaching and learning aids:** Visual aids such as science kit items, improvised teaching aid, ICT equipment including the internet network
- charts, posters, flashcards, diagrams, maps, and models; audio-visual aids including projectors, radios, and videos; and digital resources such as e-books, educational websites, and online learning platforms that enhance conceptual understanding.
- **Classroom materials**: Chalkboards/whiteboards, flip charts, markers, and stationery to support daily classroom instruction.
- **Library and resource centre materials**: Access to a well-equipped library with supplementary reading

materials, journals, and reference documents on history, culture, ethics, and religion.

- **Field visit resources**: Materials to support educational tours and fieldwork, such as journals, notebooks, and logistical support, since field visits and community interactions are integral to experiential learning in this subject.
- **Community and cultural resources**: Access to local leaders, religious institutions, museums, cultural heritage sites and genocide memorial sites that provide learners with real-life exposure to the values and practices being studied.
- **Assessment tools**: Rubrics, checklists, portfolios, and test materials are necessary to support continuous and summative assessment in line with the competence-based approach.

These resources should be adapted to the learners' context, ensuring inclusivity and accessibility for learners with special educational needs.

5.2.Human resource

The successful implementation of this syllabus relies heavily on qualified, competent, and motivated human resources. The Science and Elementary Technology teacher should be equipped with a strong pedagogical content knowledge (PCK) and should be creative and able to improvise since many of teaching aids can be found around the school and hand-made by the teachers themselves.

5.3.Skills required for the teacher of SET

Effective teaching of Science and Elementary Technology requires teachers to possess a broad set of professional, pedagogical, and interpersonal skills. These competencies enable them to deliver accurate subject content, promote values and attitudes, and foster holistic learner development in line with the Competence-Based Curriculum. The essential skills include:

a) Subject matter expertise

- Strong mastery of science concepts and technological practices to ensure accurate and comprehensive content delivery.
- Ability to make meaningful connections between Science and Elementary Technology and other disciplines, linking classroom learning to real-life contexts.

b) Pedagogical and instructional skills

- Capacity to design and implement learner-centered, participatory, and inclusive lessons using debates, role-plays, storytelling, projects, and discussions.
- Competence in integrating cross-cutting issues such as peace, gender, human rights, and environmental sustainability.
- Creativity and innovation in developing and applying diverse teaching resources, including ICT tools, realia, and community-based materials.
- Ability to adjust instruction to learners' levels, ensuring inclusivity and engagement for all.

c) Assessment skills

- Proficiency in designing and applying formative and summative assessments aligned with curriculum competencies.
- Effective use of rubrics, portfolios, checklists, and performance tasks to monitor knowledge, skills, and values acquisition.
- Skill in giving constructive feedback that motivates learners and guides improvement.

d) Classroom management and facilitation

- Ability to establish a respectful, safe, and inclusive learning environment that promotes tolerance and values diversity.

- Proficiency in managing group work, discussions, and collaborative Learning activities.
- Sensitivity and neutrality in addressing religious, ethical, and cultural issues.

e) Communication and interpersonal skills

- Strong oral and written communication to simplify complex ideas, stimulate dialogue, and foster critical reflection.
- Active listening and empathy to respond effectively to learners' academic and personal needs.
- Collaboration with colleagues, parents, school leaders, and community stakeholders to support holistic learner growth.

f) Guidance and counseling skills

- Ability to provide moral, spiritual, and emotional guidance to learners, supporting their ethical development and social well-being.
- Demonstrating passion, impartiality, and genuine care for children in the teaching and learning process.

g) Professional and ethical competence

- Commitment to continuous professional development through reflective practice, training, and peer collaboration.
- Integrity, impartiality, and ethical conduct, serving as a role model for learners.
- Capacity to balance academic instruction with the cultivation of values and responsible citizenship.

h) Research and innovation skills

- Engagement in reflective practice and classroom-based research to improve teaching and learning.
- Adaptation of innovative approaches and ICT tools to enhance learner participation.

- Ability to contextualize global knowledge within Rwanda's socio-cultural environment.

6. SYLLABUS UNITS

6.1.Presentation of the structure of the syllabus units

The Science and Elementary Technology syllabus is designed as a single, integrated syllabus implemented uniformly across all grades. Its structure follows a logical progression that ensures clarity, consistency, and alignment with the Competence-Based Curriculum approach.

At each grade level, the syllabus is organized into **Topic areas** and each topic area is composed of **Units**, and every unit is characterized by the following features:

1. **Alignment with lessons**: Each unit corresponds to a specified number of lessons, ensuring effective time allocation and instructional planning.
2. **Key unit competence**: Every unit is built around a *Key unit competence* that guides all teaching and Learning activities. This competence represents the overall learning goal to be achieved by both teacher and learners.
3. **Learning objectives**: Each key unit competence is translated into specific Learning objectives, categorized as follows:
   - **Type I (Knowledge and Understanding):** Focused on foundational knowledge and comprehension, often referred to as *Lower Order Thinking Skills (LOTS).*
   - **Type II and Type III (Skills, Attitudes, and Values):** Aimed at developing practical skills, critical thinking, ethical values, and positive attitudes. These objectives, known as *Higher Order Thinking Skills (HOTS),* form the core focus of the adapted competence-based curriculum.
4. **Content specification:** Each unit outlines the scope of content to be taught and learned, ensuring that teachers and learners work within the boundaries set by the stated Learning objectives.

6.2. Science and Elementary Technology for Primary Four (P4)

6.2.1. General competences

At the end of P4, the following main competences would be achieved:

- Make useful and safe objects using local materials and take care of them properly.
- Define different ICT terms used in the ICT domain and use them in correct contexts. Manage files using the Sugar Journal and flash disk safely and responsibly.
- Use basic graphic and multimedia tools to create simple drawings and open simple visual and audio content
- Design and construct geometric shapes in Turtle art activity and create animations using Scratch and PictoBlox Programming.
- Explain the importance of air, wind, and sound, their uses and dangers, and learn how to protect yourself from loud noises and the environment.
- Explain what soil is, describe its uses and importance, and demonstrate care for protecting and using soil wisely.
- Classify the animals according to how animals breathe, move, eat and have babies and show care and curiosity about animals and their role in our world.
- Describe how to care for rabbits and chicken, choose healthy animals, build proper shelters, feed them correctly, protect them from diseases, show interest and care in raising them for home and community benefits.
- Describe how seeds grow into plants, identify plant parts and their roles, carry out simple planting activities, show care and curiosity about how plants grow and why they are important.

- Name the five sense organs, describe their functions, practice ways to care for them, and show concern for keeping their sense organs healthy and safe.
- Name the main parts of the skeleton, explain what it does, practice how to keep bones safe and healthy and show care in preventing and responding to bone accidents.
- Name the main types of muscles, explain what muscles do, practice safe exercises to keep muscles strong and show care in protecting their muscles from injuries.

6.2.2. Table units for Primary 4

Topic area: Tools and objects production				
P4, SET	**Unit 1:** Objects production			**Number of periods: 7**
Key unit competence: Make useful safe objects from local materials and care for them properly.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify common local materials used to make toys, utility, and learning objects. – Explain the steps and techniques – for making different objects using appropriate materials.	– Select the appropriate local materials based on the object to be made. – Create toys, learning tools, and utility objects using correct techniques and materials.	– Show interest and curiosity in using local materials to create useful objects. – Demonstrate creativity, imagination, and willingness to try new ideas when making objects. – Appreciate and take pride in well-made, handmade toys and utility objects.	– **Making toys using Wires** • Making a toy bicycle using wire • Making a wire doll – **Making toys using clay** • Making a cat from clay • Making a motorcycle from clay – **Making utility objects using sticks** • Making a basket using sticks.	– Brainstorm and categorize available local materials provided. – In group, make a discussion on which materials are best suited for specific objects: toys, utility, or learning tools. – Making a motorcycle from clay – Making a wire doll

– Describe how and why to maintain, clean, and take care of toys and utility objects to ensure durability and safety. – Explain the purpose and function of handmade toys and utility objects in everyday life and learning	– Shape,mold, bend, or weave materials into functional items following step-by-step the instructions – Maintain and repair made objects by cleaning or fixing when needed.	– Care about safety during the making, use, and storage of objects. – Handle tools and materials safely and carefully during practical activities. – Value teamwork and show respect when working with others. – Promote sustainability by reusing and appreciating natural materials	– **Making utility objects using banana fibres** • Making a mat using Banana fibres • Making a dustbin using banana fibre – **Maintenance of utilities and learning objects**	– Making a toy bicycle using wire – Demonstrate how to keep the workspace clean and safe. – Design and make a dustbin and a mat using banana fibre through engineering process. – Making a basket using sticks through engineering process. – Group discussion on object maintenance and creating a shared guide or poster on care practices.

Links to other subjects: *Art and craft (designing and decorating toys and objects), Entrepreneurship (create marketable items), Mathematics (measuring lengths, angles, and sizes), English (written instructions).*

Generic Competences:

- ***Creativity and innovation:*** through designing and making useful objects from locally available materials, encouraging pupils to generate original ideas and create practical solutions.
- ***Cooperation, interpersonal relation and life skills:*** developed through pair and group work, where pupils share materials, exchange ideas, and build teamwork and communication skills.
- ***Critical thinking:*** developed by selecting suitable materials, comparing their properties, and choosing the safest and most effective methods for constructing and maintaining the objects.

Basic values:

- ***Hard Work:*** developed through constructing and maintaining useful objects with diligence, persistence, and commitment to quality work.
- ***Self-Reliance:*** developed by using locally available materials to solve practical problems independently and build confidence.
- ***Respect for others and human rights:*** promoted through sharing of tools and materials responsibly, respecting classmates' ideas, and following safety rules to protect everyone.

Cross cutting Issues

- ***Environment***al and sustainability: Use recyclable or natural materials (e.g., bottle caps, leaves, cardboard) to make learning objects. Discuss how using local and natural materials helps protect the environment.
- Inclusive edu***cation:*** Ensure all pupils, including those with disabilities or learning challenges, can participate. Design objects that are easy to touch, see, or hear for students with different needs.
- ***Gender equality:*** Involve both boys and girls equally in preparing and using learning objects. Avoid assigning gender-specific roles (e.g., don't let only boys handle tools).
- ***Peace and values:*** Set classroom rules that promote respect, sharing, and turn-taking. Discuss values (like honesty or caring) through storytelling using objects.
- ***Financial education***: Help pupils understand money, saving, and resource management. E.g: Discuss the cost and value of materials used in making objects

Assessment criteria: *Assess the pupil's ability to make useful and safe objects using local materials and take care of them properly.*

Materials: *Clay, wires, fibres, knife/ razor-blade, needle or lancelet, wood, sisal, sticks, manilla paper and scissor, soft binding wire, pliers and wire cutters, small sticks (for structure),bottle tops or small plastic lids (for wheels), gloves (for safety), glue*

Topic area: ICT				
P4, SET	**Unit 2:** ICT basics			**Number of periods: 11**
Key unit competence: Use basic ICT terms correctly and manage files safely using Sugar Journal and a flash disk.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define ICT and its main components. – Explain the roles of ICT incommunication, education, business, and daily life. – Explain common ICT terms and internet-related terminology.	– Use the Sugar Journal to manage activities. – Organize and manage files in the Journal. – Interact with Sugar user interfaces to navigate and use basic functions.	– Use ICT terms correctly in speech and writing. – Show interest and curiosity in using ICT tools and learning new ICT vocabulary. – Appreciate the importance of ICT in daily life, communication, and education.	– **Meaning of ICT** • Definition of ICT • Roles of ICT • Communication tools and their use – **Digital and analog data** • Digital data • Analogue data • Differences of analog and digital data	– In group, discuss the meaning of ICT. – Brainstorm the list of ICT tools and their uses at school and at home. – In pairs, draw a Venn diagram comparing analog and digital data. – Name different tools which use analog or digital data and explain why their data is analog or digital

– Differentiate between analog and digital data, providing clear examples. – Distinguish between hardware and software, giving – examples and showing how they work together. – Describe the elements of the Sugar interface. – Describe the purpose and use of the Journal. – Explain the function and use of a flash disk	– Insert, open, and safely remove a flash disk from a computer. – View, save, and copy files to and from a flash disk. – Share documents or files with classmates using a flash disk. – Use different techniques to search and access saved documents.	– Practice responsible and safe use of ICT tools, including the Sugar Journal and flash disks. – Work collaboratively with classmates, especially during file sharing and group ICT tasks. – Organize and manage files attentively, – showing responsibility in saving,naming, and maintaining documents. – Showing enthusiasm for interfaces like Sugar.	– **Internet related terms** • Definitions • Use of each term in everyday life – **Hardware and software** • Hardware • Software • Differences (Hardware and Software) – **Sugar interface** • Use of Journal • Opening the Journal • Closing Journal • Managing activities in the Journal • Management of files in Journal	– In group, discuss the use of internet related terms in daily life. – In group, explore computer parts and classify them as hardware or software. – Open Sugar interface then open a new activity, rename it, and search for it again, and delete unnecessary files – Create, save, and exchange a document via flash disk.

			– **Using a flash disk** • Definition • Use of a flash disk • Inserting a flash disk into a computer • Open, view, and save files • Remove a flash disk safely • Sharing files with a classmate • Taking care of your flash disk	
Links to other subjects: *English (learning ICT vocabulary), Mathematics (logical thinking), Entrepreneurship (digital business tools), Creative Arts (designing posters for hardware/software), Social Studies (responsible technology use)*				
Generic Competences: • ***Communication (Literacy and Numeracy):*** Developed through discussing ICT concepts, using ICT vocabulary correctly, presenting findings, and sharing files with classmates.				
• ***Research and problem solving:*** Developed by searching for documents, organizing files in the Sugar Journal, and using ICT tools to complete simple digital tasks. • ***Cooperation, interpersonal relations, and life skills:*** Developed through pair and group work to identify ICT tools, classify hardware and software, and share files responsibly while building teamwork skills.				

Basic values:

- ***Responsibility (Dignity and Integrity):*** Developed through using computers, flash disks, and digital files carefully while following safe ICT practices.
- ***Self-Reliance:*** Developed by independently managing files, searching for documents, saving work, and using the Sugar Journal confidently.
- ***Respect for others and human rights:*** Promoted through respecting classmates' digital work, sharing files responsibly, and using ICT tools ethically without interfering with others' data or devices.

Cross cutting Issues

- ***Peace and values education:*** Encouraging students to work together in pairs or groups peacefully, while promoting teamwork, mutual respect, and sharing of knowledge.
- ***Gender education:*** Ensuring that both boys and girls actively participate in all classroom learning and practical activities equally.

Assessment criteria: *Assess the pupil's ability to define and apply ICT terms, distinguish between analog and digital data, identify hardware and software components, manage files using the Sugar Journal and flash disk, use internet-related terms in daily life, and demonstrate safe, responsible use of ICT tools.*

Materials: *XO laptop, computer with Sugar interface, internet connection, flash disk, SD card, CDs, projector, books, printed charts/posters (showing computer components (hardware/software), analog, digital data, internet-related terms and icons)*

Topic area: ICT				
P4, SET	**Unit 3:** Graphics and multimedia			**Number of periods: 9**
Key Unit Competence: Use basic graphic and multimedia tools to create simple drawings and open simple visual and audio content.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define Paint and explain its use. – Describe steps to open, save, and close the Paint activity. – Explain the use of common Paint tools and their properties. – Identify components of the Paint environment and how to draw using freehand tools and shapes tools.	– Open, save, and close a Paint activity on the computer. – Control the movement of the touchpad (mouse) to interact with drawing tools. – Select and use Paint tools to create and improve drawings. – Draw freehand objects using brush and pencil tools.	– Show creativity and interest when using Paint and multimedia tools. – Handle digital tools with care and responsibility. – Appreciate the value and beauty of images and multimedia used in learning.	– **Starting Paint application** • Opening the Paint activity • Saving and closing Paint activity – **Paint environment** Common tools in Paint (brush tool, brush properties tool, shape tool, shape properties tool, text tool, image tool, stop)	– Opening, saving, and closing Paint activity. – Draw simple objects such as a rectangle and a person using appropriate tools. – Apply different colors to enhance drawn images. – Insert meaningful comments or text on images using the text tool. – Resize and position images within the paint window.

– Define Multimedia and explain its different types. – List examples of multimedia tools and programs. – Explain the importance of multimedia in learning and communication.	– Draw structured objects using shape tools. – Adjust tool properties such as size, color, and thickness. – Insert text and images into drawings for better presentation. – Use basic multimedia tools in learning tasks.	– Practice patience and focus when drawing or editing on the computer. – Demonstrate ethical use of images and media. – Pay attention to details and accuracy when using the Paint tools.	– **Drawing with freehand tools** • Drawing a simple rectangle • Drawing a simple house – **Drawing using shapes** • Common shapes in Paint (rectangle, triangle, line) • Using Paint to draw a person – **Multimedia** • Definition of multimedia • Types of media in multimedia • Multimedia tools • Importance of using multimedia in learning • Multimedia Programs	– Practice the control of mouse or touchpad to improve drawing accuracy. – Practice the control of mouse or touchpad to improve drawing accuracy. – Practice the control of mouse or touchpad to improve drawing accuracy. – Use multimedia programs to open different files

Links to other subjects: *Creative Arts (drawing and coloring), English (typing and inserting text), Mathematics (drawing and identifying shapes), Social and Religious Studies (Creating visual stories or messages)*

Generic Competences:

- ***Creativity and Innovation:*** Developed through creating original drawings, combining text and images, and using colors and shapes creatively in multimedia activities.
- ***Communication (Literacy and Numeracy):*** Developed by communicating ideas through digital drawings, inserting text into images, and presenting digital work to classmates.
- ***Critical Thinking:*** Developed by selecting appropriate paint tools, colors, shapes, and multimedia elements to create accurate and meaningful drawings and improve their work.

Basic values:

- ***Excellence:*** Developed through producing neat, accurate, and high-quality digital drawings while paying attention to detail and continuously improving work.
- ***Respect for others and human rights:*** Promoted through ethical use of digital images, respect for classmates' creations, and positive collaboration during group activities.
- ***Commitment and resilience:*** Developed by showing patience and perseverance while learning drawing tools, correcting mistakes, and completing multimedia tasks successfully.

Cross cutting Issues

- ***Gender Education:*** Ensure equal participation of boys and girls in all activities.
- Standardization culture: Inform pupils that multimedia products are standardized in such a way that every media has its type and extension. For example, there are JPEG images, PNG images, GIF images, etc.
- ***Peace and values education***: Tell the pupils that while developing multimedia images and other media, it is necessary to respect others, not to draw insulting images. They must make content which is not insulting to others

Assessment criteria: *Assess the pupil's ability to open, use, and close the Paint application; identify and apply common Paint tools to draw objects using freehand and shapes; Explain multimedia and use multimedia programs to open related files and show responsibility, creativity, and collaboration when working on digital drawings and multimedia tasks.*
Materials*: XO laptop, computers with Paint and multimedia programs installed, projector, speakers or headphones, microphones, flash disks,* internet access, drawn images.

Topic area: ICT				
P4, SET	**Unit 4:** Programming for children			**Number of periods: 16**
Key unit competence: Design and construct geometric shapes in Turtle art activity, create animations using Scratch programming and identify the main parts of a robot.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify the main parts and tools in Turtle Art and Scratch windows. – Explain how to open, save, and close projects in Turtle Art and Scratch. – Describe how to draw shapes like squares, rectangles, and circles using Turtle Art.	– Open, save, and close activities in Turtle Art and Scratch. – Navigate and identify the toolbars and components in both Turtle Art and Scratch. – Draw geometric shapes using Turtle Art commands.	– Express the desire to draw more colorful drawings using Turtle Art commands. – Appreciate how to arrange commands to make animations. – Show interest and creativity in creating digital projects.	– **Opening, saving and closing Turtle blocks** • Opening Turtle Art Activity • Saving Turtle Art Activity • Closing Turtle Art Activity – Elements of the Turtle Art Window • Main toolbar • Palette toolbar	– Open, save and close Turtle Art and identify its windows' elements. – Drag and drop the blocks from the Turtle palette to the main area to draw different shapes. – Delete a block by dragging it back onto the palette.

– Explain the purpose of coding blocks and how to connect them in Scratch and Turtle Art – Define animations and backgrounds in Scratch. – Identify the parts of a robot and explain how they function. – Describe steps for creating digital drawings, animations. – Explain how to make a robot do simple movements.	– Create basic commands by connecting blocks in Scratch. – Create a simple animation using Scratch blocks. – Change and code the background/ stage in a Scratch project. – Use basic commands to control movement of a robot. – Switch between different backgrounds while making an animation.		– **Drawing shapes using Turtle Art** • Drawing a square • Drawing a rectangle • Drawing a circle – **Opening, saving, and closing projects in Scratch** • Opening Scratch application • Saving Scratch project • Closing Scratch project • Opening a saved Scratch project • Main parts of the Scratch window • Different categories of coding blocks	– Draw a square, rectangle and a circle by arranging the blocks in the correct sequence. – Explore the Scratch programming environment – Use different Scratch blocks in creating animations and backgrounds. – Individually, add a background and make it switch to another background when you click the green flag.

			• Connecting blocks to make commands – **Making animations in Scratch** – **Adding and coding a background** – **Robotics** • Parts of a Robot • Controlling a robot's movement	

Links to other subjects: *Mathematics (shapes and geometry), English (instructional writing), Creative Arts (drawing and design), ICT (programming)*

Generic Competences:

- ***Critical thinking:*** Developed by analyzing coding sequences, predicting the outcomes of commands, and identifying and correcting errors while creating digital projects.
- ***Creativity and innovation:*** Developed through designing original drawings, animations, and interactive projects using Turtle Art, Scratch, and PictoBlox.
- ***Research and problem solving:*** Developed by exploring programming tools, testing coding blocks, solving programming challenges, and improving projects through trial and error.

Basic values:

- ***Self-reliance:*** Developed through independently creating, saving, and modifying programming projects, building confidence in using digital technologies to solve tasks.
- ***Commitment and resilience:*** Developed by persevering through coding, testing, debugging, and improving animations or robot movements until the desired outcome is achieved.
- ***Solidarity and democracy:*** Promoted through working collaboratively in pairs or groups, sharing ideas, respecting others' contributions, and making joint decisions during programming activities.

Cross cutting Issues

- ***Gender education:*** Make sure that all pupils both male and females participate equally programming activities
- ***Financial education:*** Make pupils appreciate the importance of using software instead of using papers in managing information

Assessment criteria: *Assess the pupil's ability to design and construct geometric shapes in Turtle Art activity, create animations using Scratch programming and identify the parts of a robot.*

Materials*: Projector and screen, speakers or headphones, computers with Turtle Art and Scratch installed, Pictures or videos of robots in action.*

Topic area: Our Environment				
P4, SET	**Unit 5:** Air, wind and sound			**Number of periods: 14**
Key unit competence: Explain the importance, uses, and dangers of air, wind, and sound, and demonstrate how to protect yourself from loud noise and care for the environment.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define air. – State the composition of air. – Explain the importance of air. – Explain the uses and dangers of air components. – Describe main properties of air.	– Sort and classify different components of air and describe their uses. – Make simple tools to get enough fresh air at home or in class. – Distinguish between types of wind through observation or stories.	– Appreciate the importance of air and wind in our environment. – Express appreciation for the role of oxygen in keeping us alive and healthy. – Show concern on the utility and dangers of carbon dioxide.	– **Main Properties of air** – **Composition of air (Nitrogen, oxygen, carbon dioxide, other gases)** – **Dangers of components of air** • Carbon Dioxide (CO_2) • Carbon Monoxide (CO).	– Demonstrate the properties of air through simple experiments: show that air has weight, occupies space, and can be compressed using materials like balloons, syringes, beam or electronic balance. – Draw diagrams showing composition of air. – Prove existence of oxygen in air and its importance for burning using light candles in two different containers.

– Define wind – Name and describe different types of wind. – List the uses of wind in daily life. – Identify dangers of strong wind and ways to stay safe. – Define the sound. – Identify sources of sound and noise in the environment. – Define reflection of sound.	– Measure and compare wind speed using simple tools (e.g., pinwheel, wind vane). – Use ways to protect the environment from strong wind (like planting trees). – Apply techniques of preventing our environment from strong wind. – Create models or posters showing uses and dangers of wind.	– Be aware of the dangers of carbon monoxide. – Show concern about air pollution issues. – Show care for clean air by helping to keep it free from smoke and dirt. – Respect air as a natural resource and understand the need to protect it. – Demonstrate safe behaviors during strong wind.	– Wind and its types • Light Wind • Breeze Wind • Storm Wind – Uses of air and wind – Dangers of wind and its prevention – Nature and production of sound – Propagation and Reflection of sound – Noise and its effects – Protection of ears from noise.	– In group, make an investigation to show the existence of carbon dioxide in air and importance of carbon dioxide for plants. – Make an investigation on dangers of carbon monoxide. – In group, investigate the existence of wind in their environment by lighting a candle and place it in the classroom near window. – Measure and compare wind speed using simple tools (e.g., pinwheel, wind vane). – Demonstrate how wind can be used to separate grains from chaff by winnowing. – Make a local field visit on areas affected by strong winds. Observe and compare how wind has changed the environment or damaged plants and structures.

– Describe sound propagation. – Differentiate good sound and noise. – Recall how too much noise can hurt ears. – Explain how to protect ears from loud sounds.	– Make and use a simple tool to show that sound needs something to travel through. – Make and use tools to protect ears from loud noise.	– Show awareness about the effects of sound on human hearing. – To be careful and avoid long exposure to harmful noise.		– In groups, make a simple telephone using two boxes and a string. Use it to investigate how sound travels through the string. – Create a sound detector using local materials. – Use two tubes or pipes to show how sound can bounce back (reflection). Listen carefully and share what you hear. – Make different sounds and noises. Discuss how they are different and when sound becomes noise. – In pairs, discuss ways of protecting ears from noise.

Links to other subjects: *Social studies(weather), Mathematics (measuring wind speed and distance), English (vocabularies), Creative Arts (making posters)*

Generic Competences:

- ***Critical thinking:*** Developed through investigating the properties of air, comparing different types of wind and sound, interpreting experimental observations, and explaining environmental phenomena.
- ***Research and problem solving:*** Developed by conducting simple investigations using balloons, candles, pinwheels, and string telephones to collect evidence and explain concepts related to air, wind, and sound.
- ***Cooperation, interpersonal relations, and life skills***: Developed through group experiments, discussions, model construction, and sharing ideas while building teamwork and communication skills

Basic values:

- ***Respect for others and human rights:*** Promoted through protecting oneself and others from harmful noise, practicing safe behaviors during experiments, and promoting a healthy environment.
- ***Hard work:*** Developed through active participation in practical investigations, careful observation, and completing scientific activities with diligence and responsibility.
- ***Commitment and resilience:*** Developed by persevering during experiments, making accurate observations over time, and investigating environmental phenomena to reach reliable conclusions.

Cross cutting Issues

- ***Environment and sustainability:*** In order to avoid environmental pollution, before, during or after practical tasks, pupils should care for clean air helps protect health and the planet. E.g: Pupils draw good air (trees, birds) and bad air (smoke, cars).
- ***Gender equality:*** Both boys and girls should have equal chances to explore science (e.g., making wind with fans or hearing sounds).
- ***Peace and values education:*** Children clap soft, loud, and say: "I wait for my turn." "They listen to each other."
- ***Inclusive education:*** During the lesson, some children may have hearing difficulties. Teaching sound includes different ways of sensing (e.g., vibration) or Students touch balloon or speaker to feel vibrations.

Assessment criteria: *Assess pupils' ability to explain correctly the importance of air, wind, and sound, their uses and dangers, how they protect themselves from loud noises.*

Materials: *Winnower, balloons, seedling, beam or electronic balance, diagrams and charts, Simple anemometers or pinwheels, small fans or blowers, Mirrors, Cardboard, paper, scissors, glue, candles, cups, etc.*

Topic area: Our Environment				
P4, SET	**Unit 6:** Soil			**Number of periods: 12**
Key unit competence: Explain soil, describe its importance and uses, and demonstrate its wise use and protection.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define soil – Identify types of soil. – Describe the composition of soil. – Explain how soil is used in daily life. – Identify the characteristics of fertile soil.	– Observe and compare different types of soil by texture and color. – Sort and classify samples of loam, clay, and sandy soils.	– Show appreciation for the importance of soil to people and the environment. – Value fertile soil as a natural resource that must be preserved. – Develop a sense of responsibility in protecting soil from erosion.	– **Definition and types of soil:** • Definition of soil • Main types of soil (Loam, clay and sand) – **Composition of soil** • Tiny Rocks (Minerals) • Air • Water	– In group, observe various samples of soil collected from different sites, label them according to their characteristics. – Field visit in school surrounding to investigate the suitable use of types of soil and their composition. – In group work, perform a soil jar test: Put soil in a transparent bottle, add water, shake, and observe layers after settling (rocks, sand, silt, humus).

– Define soil erosion and identify its causes and agents. – Distinguish between types of soil erosion. – Identify signs of soil erosion in their local area. – Explain methods of preventing soil erosion.	– Test soil for components like water retention and presence of humus. – Draw and label diagrams showing soil layers or soil composition. – Design or suggest simple solutions to prevent erosion. – Use simple ways to protect soil from erosion.	– Be motivated to avoid harmful practices like deforestation and bush burning. – Take pride in activities that help protect and improve the land. – Work cooperatively with others to solve environmental problems. – Show interest and curiosity in learning about the natural environment. – Show concern and advocacy about environmental protection issues.	• Humus (Dead Plants and Animals) – **Use of soil** – **Characteristics of fertile soil** – **Soil erosion and its causes** • Agent of soil erosion • Causes of erosion – **Types of erosion** • Splash erosion • Sheet erosion • Rill erosion • Gully erosion	– Carry out an investigation/experiment on the characteristics of fertile soil. – In pairs, draw or write different uses of soil. – Visiting farms to gain experience on how to prevent and control soil erosion. – Practical work to apply measures for preventing and controlling soil erosion: Plant threes, make bench terraces. – Field Visit: Visit a nearby area where soil erosion has occurred or where farming methods are used to prevent erosion.

			– **Prevention of erosion** • Planting grass and trees • Terracing on hills • Avoid cutting down trees (Deforestation) • Avoid overgrazing • Avoid Burning Bushes (Bushfires)	– Work in groups to design a model or drawing of a farm using erosion prevention methods. – Write a short paragraph or sentence on how to protect soil at home or school compound.
Links to other subjects: *Agriculture (erosion affects), Social Studies(deforestation), Creative Arts(drawing and modeling), English(reading, writing), Mathematics (measuring soil layers)*				
Generic Competences: • **Critical thinking:** Developed through observing, comparing, and classifying different soil types, interpreting investigation results, and explaining the causes and effects of soil erosion. • **Research and problem solving:** Developed by conducting field visits, performing soil experiments, investigating soil characteristics, and proposing practical solutions to prevent soil erosion. • **Cooperation, interpersonal relations, and life skills:** Developed through group work to classify soil samples, conduct experiments, plant trees, design erosion control models, and share ideas to solve environmental problems.				

Basic values:

- ***Responsibility (Dignity and Integrity):*** Developed through protecting soil, avoiding harmful environmental practices, and promoting sustainable land use.
- ***Hard work:*** Developed through active participation in planting trees, constructing terraces, and conducting soil investigations.
- ***Patriotism:*** Developed by conserving Rwanda's natural resources through soil protection, sustainable agriculture, and environmental conservation.

Cross cutting Issues

- ***Gender:*** Equality and Team work between boys and girls are attained from working together without discrimination.
- ***Inclusive education:*** When all pupils study and work together in different activities including those with special problems/disabilities.
- ***Environmental sustainability:*** It is done when pupils understand well the types of soil and how they prevent them from erosion. It is accomplished when the pupil collects different types of soil from different places carefully without destroying the vegetation.
- ***Financial education:*** When explaining the functions of maintaining/ preserving land because it is a resource with much importance to people and country at large.

Assessment criteria: *Assess pupils' ability to define soil and identify its types, describe its composition and uses, explain the causes, types, and prevention of soil erosion, participate in practical classification and observation activities, draw and label related diagrams, collaborate effectively in group tasks, and demonstrate care for the environment and interest in learning.*

Materials: *Loam soil, Clay soil, Sandy soil, Humus (can be from compost or decayed leaves), Small stones or gravel, Water (for experiments), Spoons or small shovels, Watering cans, small planting pots, Charts or posters, Pencils, crayons, or markers, Glue and scissors, Hoes or trowels, Gardening gloves*

Topic area: Our Environment				
P4, SET	**Unit 7:** Animals classification			**Number of periods: 10**
Key unit competence: Classify animals by how they breathe, move, feed, and reproduce, and demonstrate care and curiosity about their role in the environment.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify common animals based on their habitats and body coverings. – Distinguish common animals based on their habitants and body coverings. – Classify animals into vertebrates and invertebrates.	– Observe and describe the external features of different animals. – Compare the outside features of animals to identify similarities and differences.	– Demonstrate care and responsibility in protecting animals and preserving wildlife. – Display curiosity and interest in learning more about animals and their differences. – Develop appreciation for biodiversity and the roles animals in the environment.	– **Identification of various animals** • Common animals **(**Cow, goat, dog, cat, hen, lizard, etc.) • Identification of animals based on where they live. (land animals, water animals, air animals) • Identification of animals by body covering. (fur or hair, feathers, scales, shell)	– In group work, identify and classify the animals found in the surroundings and group them according to their major characteristics. – In pairs, sort animal pictures or cards into two groups: animals with backbone (vertebrates) and without backbone (invertebrates).

– Classify animals according to their respiration mode. – Group animals according to their mode of locomotion. – Classify animals according to their feeding habits. – Identify animals by their mode of reproduction.	– Group animals based on how they move, breathe, feed, and reproduce. Differentiate invertebrate from vertebrate animals. – Classify animals according to their locomotion, feeding, breathing, and reproduction modes. – Match animals with their correct respiration and feeding method.	– Value the importance of preserving animal habitats and promoting animal welfare. – Demonstrate respect for both domestic and wild animals.	– **Classification of animals according to the backbone** • Animals with a backbone (Vertebrates) • Animals without a backbone (Invertebrates) – **Classification of animals according to how they breathe (respiration mode)** • Animals that breathe through lungs • Animals that breathe through gills • Animals that Breathe through Skin • Animals that Breathe through Spiracles • Animals that breathe through both lungs and skin	– Field visit in school surroundings, discuss how animals move, feed and reproduce. In group, do simple experiment for identification of local spiracles in insect. Take two insects and two glasses of water and then dip one insect in water by its abdomen and the one by its head. – Observe insects to discuss about different ways of animal breathing. – Role play to simulate animals' locomotion. Crawl, walk, fly. – In group, collect and discuss pictures or models of animals, noting where they live and their body coverings.

	– Draw or label diagrams of animals showing key features such as body coverings or movement types.		– **Classification of animals according to how they move (locomotion mode)** • Flying Animals • Crawling Animals • Jumping or Hopping Animals • Walking Animals • Swimming Animals – **Classification of animals according to what they eat (feeding mode)** . Herbivores, Omnivores Insectivores ,Granivores – **Classification of animals according to their reproductive mode** • Animals that lay eggs • Animals that give birth to babies	– In pairs, Match animals to their method of breathing: lungs, gills, skin, spiracles, or both lungs and skin. – In pairs, sort animals into herbivores, carnivores, omnivores, insectivores, and granivores using pictures or flash cards. – In group, discuss ways to protect animals and their habitats. – Draw animals and sort them into two groups (animals with backbone and animals without backbone). – Design a robot inspired by animal locomotion to solve the problem of carrying crops to the other side of the river to sell them.
Links to other subjects: *Agriculture (farm management), Social Studies (draw animals), English (read, write), Mathematics (count animals based on features)*				

Generic Competences:

- ***Critical thinking:*** Developed through observing, comparing, and classifying animals according to their body coverings, backbone, respiration, locomotion, feeding, and reproduction.
- ***Research and problem solving:*** Developed by conducting field observations, simple investigations, gathering information about animals, and using evidence to classify them correctly.
- ***Cooperation, interpersonal relations, and life skills:*** Developed through working in pairs and groups to classify animals, share observations, and discuss ways to protect animals and their habitats.

Basic values:

- ***Respect for others and human rights:*** Developed through treating domestic and wild animals humanely and appreciating the importance of animal welfare.
- ***Responsibility (Dignity and Integrity):*** Developed through protecting animals, preserving their habitats, and demonstrating ethical behavior during practical activities.
- ***National and cultural identity:*** Developed through appreciating Rwanda's biodiversity and promoting the conservation of local animal species and their habitats.

Cross cutting Issues

- ***Environmental sustainability:*** This will be achieved after pupils have well understood the different types of animals and how they can be protected.
- ***Gender:*** Assign equal roles to boys and girls during group activities (e.g., observing animal behavior, presentations).
- ***Inclusive education:*** Use diverse teaching aids that support pupils with special needs (e.g., tactile materials, audio-visuals).
- ***Peace and values education:*** In group activity, promote respect for all living things by teaching animal welfare and kind treatment of animals.

Assessment criteria: *Assess pupils' ability to observe and describe animal features accurately, classify animals correctly based on backbone presence, respiration, locomotion, feeding, and reproduction modes, compare and group animals using different criteria, draw and label animals with correct features, participate actively in group activities, and demonstrate respect and care for animals and their environments.*

Materials: *Animal pictures, container, water, animals farm, Drawing paper, crayons, markers, flash cards.*

Topic area: Our Environment				
P4, SET	**Unit 8:** Rabbits and chickens management			**Number of periods: 17**
Key unit competence: Describe proper keeping and care of rabbits and chickens for home and community benefits.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Describe the features of good rabbits and chicken to keep. – Identify common diseases that affect rabbits and chicken. – Identify the importance of rabbit farming.	– Choose good rabbits to rear. – Design a small rabbit-keeping project. – Feed rabbits properly and keep them healthy.	– Show interest in keeping rabbits and chicken. – Appreciate the value of raising animals at home. – Support family and neighbors in taking care of rabbits and chicken	**A. Rabbits farming house** – **Conditions of a good rabbit hutch** – **Characteristics of good rabbits** – **Criteria for choosing a rabbit to rear** – **Proper feeding of rabbits** • Types of food rabbits eat	– Field visits of different rabbit farms, make observations and discuss the conditions of a good rabbit hutch. – Observe and discuss the characteristics of good male and good female rabbit to mate. – Observe hutch and discuss the best practice of feeding rabbits and keeping their hygiene. – Conduct research using library books/search engines, then make a group discussion about the common diseases of rabbits.

– Identify the types of chicken breeds. – List the steps in chicken reproduction. – Explain different kinds of chicken feed. – Explain ways of feeding chicken properly.	– Build a good chicken house and keep them properly. – Care for rabbits and chicken correctly at home.		• Things to avoid • Feeding tips – **Rabbit health and common diseases** • Rabbit health • Common diseases in rabbits • Prevention/ Treatment – **Importance of rabbit farming** **B. Chicken farming** – **Conditions of good chicken house** – **Types of chicken breeds** • Egg-laying (Layers) • Meat-type (Broilers) • Dual-purpose	– Design a model of a good hutch for rabbit. – Conduct research and discuss the importance of rabbit farming. – Implement a small scale cuniculture project. They will feed them, clean the hutch and diagnose for possible diseases (at school or at home). – In groups, design a model chicken house using local materials. – Observe and match pictures of chicken breeds with their names and characteristics. – Role Play to Simulate a hen brooding and caring for chicks. – Make research and discuss on the importance of chicken farming.

			– **Reproduction of chicken** • Laying eggs • Incubation – **Proper feeding of chicken** – **Chicken diseases and their prevention** – **Importance and process of chicken farming** • Importance of chicken farming. • Chicken Farming Process	
Links to other subjects: *Agriculture (farm management)*				
Generic Competences: • ***Research and problem solving:*** Developed through conducting field visits, researching rabbit and chicken diseases, and applying appropriate methods of feeding, housing, and disease prevention. • ***Cooperation, interpersonal relations, and life skills:*** Developed through collaborative farm visits, group discussions, model construction, and small-scale rabbit and chicken farming projects. • ***Critical thinking:*** Developed by analyzing the characteristics of healthy rabbits and chickens, comparing breeds, selecting suitable animals for rearing, and making informed decisions on housing, feeding, and disease management.				

Basic values:

- ***Hard work***: Developed through feeding animals, cleaning shelters, maintaining hygiene, and caring for rabbits and chickens with diligence.
- ***Responsibility (Dignity and Integrity):*** Developed through providing proper care, feeding, shelter, and disease prevention while handling animals humanely.
- ***Self-reliance:*** Developed by acquiring practical livestock management skills to manage small-scale rabbit and chicken farming for family and community benefits.

Cross cutting Issues

- ***Gender:*** In mixed-gender pairs, pupils simulate a small farm where both are responsible for feeding, cleaning, and collecting eggs.
- ***Environmental protection:*** In groups, pupils create posters showing how to keep rabbit and chicken houses clean without polluting the environment (e.g., using compost, avoiding plastic waste).
- ***Financial education***: Pupils count and price eggs or rabbits they "sell" using local market prices.
- ***Inclusive education:*** Create simplified stations with pictures, models, or verbal descriptions for pupils with learning or physical difficulties. Peer helpers support them during group activities

Assessment criteria: *Assess pupils' ability to Describe how to care for rabbits and chicken, choose healthy animals, build proper shelters, feed them correctly, protect them from diseases, show interest and care in raising them for home and community benefits.*

Materials: *Rabbits, rabbit hutch, hay, good high fibre pellet, fresh vegetables and clean water*

Topic area: Our Environment				
P4, SET	**Unit 9:** Plants germination			**Number of periods: 10**
Key unit competence: Describe how seeds grow into plants, identify plant parts and their functions, demonstrate care and value the importance of plants.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define germination. – List the conditions of germination. – Identify the main stages of germination. – Identify the types of germination.	– Select good Seeds. – Design a setting enabling the germination of some samples of seeds. – Draw and label main parts of a plant. – Plant seeds in the school garden.	– Show curiosity by exploring how different seeds grow. – Show awareness of how plants help people and the environment. – Develop a caring attitude towards protecting and growing plants.	– **Seed germination and its conditions** • Conditions necessary for seed germination – **Types of germination** • Epigeal Germination • HypogealGermination Stages of germination – **Parts of a plant** – **Functions of parts of the plant**	– In groups, carry out investigation on germination of beans and maize seeds and discuss about what happens when a seed is planted. – In a project: carry out an investigation on stages of germination for beans and maize seeds and draw the parts of new plant. – Make observation on germinating seedling of maize and bean to identify types of germination.

– Describe the stages of seed germination. – Label the different parts of a plant. – State the function of parts of plant.				– Visit the school surroundings to observe, name different parts of plant and discuss their functions. – Plant a variety of seeds and maintain new plants in the school garden to protect its environment. – Draw and shade plants and its parts. – Project: Investigate the importance of water on seed germination (Plant seeds in two separate jars. Water one jar regularly and leave the other without water to observe the difference in growth).
Links to other subjects: *Agriculture: farm management*				
Generic Competences: • ***Research and problem solving:*** Developed through investigating the conditions for seed germination, observing plant growth, collecting evidence, and drawing conclusions from experiments. • ***Critical thinking:*** Developed by comparing types of germination, identifying plant parts and their functions, and interpreting experimental results.				

- ***Cooperation, interpersonal relations, and life skills:*** Developed through collaborative planting activities, school garden projects, and germination investigations by sharing responsibilities, observations, and ideas.

Basic values:

- ***Responsibility (Dignity and Integrity):*** Developed through caring for planted seeds, watering them regularly, maintaining the school garden, and protecting the environment.
- ***Hard work:*** Developed through active participation in planting, observing seed growth, maintaining plants, and completing practical investigations.
- ***Commitment and resilience:*** Developed by monitoring seed germination, recording observations consistently, and caring for plants until they grow successfully.

Cross cutting Issues

- ***Environment and sustainability:*** Pupils plant bean seeds in small containers using local soil. While waiting for germination, the teacher guides a simple discussion in English: "Why do we plant trees?" or "How do plants help us?"
- ***Gender:*** All pupils, regardless of gender, play equal roles in planting and watering seeds. In mixed gender pairs, children observe their seeds daily and draw simple pictures of plant growth. Teachers ensure both boys and girls speak during the activity (e.g. "My plant has roots").
- **Financial education:** Pupils discuss how growing plants (like maize or beans) can help families or communities. Picture talk activity using images of a market and farmers. Teacher asks: "Who growsplants? Why?" Pupils say: "To eat" or "To sell.

Assessment criteria: *Assess pupils' ability to describe how seeds grow into plants, identify plant parts and their roles, carry out simple planting activities, show care and curiosity about how plants grow and why they are important.*

Materials: *Seeds of maize and beans, transparent plastic pots, water*

Topic Area: The Human Body				
P4, SET	**Unit 10:** Human sensory organs			**Number of periods: 10**
Key unit competence: Identify the five sense organs, describe their functions, and demonstrate how to care and keep them healthy and safe.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the function of ear. – Describe the function of eyes. – State ways of keeping hygiene of sense organs. – Identify common eye problems and explain how to prevent them.	– Practice keeping skin clean. – Respond correctly when someone has a skin injury. – Clean the tongue properly. – Recognize different tastes using the tongue.	– Show interest of keeping good hygiene of sense organs. – Care about keeping all sense organs clean and healthy. – Visit a doctor or clinic when they have problems of sense organs.	– **Functional mechanism of all sensory organs** – **Function and maintenance of skin** • Function of the Skin • Hygiene of the Skin • Maintenance of the Skin – **Function and Maintenance of tongue** • Function of the tongue	– Perform an activity to investigate how do sensory organs and brain communicate. – Play an interactive game to explore the functional mechanism of all sensory organs. – In group, discuss and implement the rules of keeping skin hygiene and exercise first aid intervention in case of skin accident – Observe on the wall chart and name different zones of the tongue then draw them in exercises book.

	– Use the sense of smell in simple tasks. – Clean properly all sense organs. – Practice good habits to keep the eyes healthy. – Use ways to stop common problems with the eyes. – Protect the nose and other organs from danger or injury.	– Be aware of how to prevent accidents of sense organs. – Practice regular cleaning and care of the sense organs. – Be alert to anything that could harm sense organs.	• • Maintenance of the tongue – **Function and maintenance of the nose** • Function of the Nose • Hygiene of the Nose • Maintenance of the Nose – **Function and maintenance of ear** • Function of the Ears • Hygiene of the Ears • Maintenance of the Ears – **Function and maintenance of the eye** • Function of the Eyes • Hygiene of the Eyes • Maintenance of the Eyes	– **Function and Maintenance of tongue** • Function of the tongue • Hygiene of the tongue • Maintenance of the tongue – **Function and maintenance of the nose** • Function of the Nose • Hygiene of the Nose • Maintenance of the Nose – Practical work: Taste different food samples to locate the different parts of the tongue. – In small group, discuss the functions of the tongue. – Draw and shade sensory organs. – Carry out an activity using a brush to clean the tongue. – In groups, conduct research and discuss ear hygiene.

Links to other subjects: *Biology: sensory organs*

Generic Competences:

- ***Critical thinking***: Developed through observing, comparing, and explaining the functions of the five sense organs, interpreting practical activity results, and identifying appropriate ways to protect them.
- ***Research and problem solving:*** Developed by investigating the functions, hygiene, and common health problems of the sense organs through observation, practical activities, and group discussions.
- ***Communication (Literacy and Numeracy):*** Developed through discussing the functions and care of the sense organs, presenting findings, labeling diagrams, and using correct scientific vocabulary.

Basic values:

- ***Responsibility (Dignity and Integrity):*** developed through demonstrating responsibility by maintaining good hygiene, protecting their sense organs, and seeking medical care when needed.
- ***Hard work:*** developed by actively participating in practical activities related to sense organ care, such as cleaning the tongue, identifying tastes, practicing first aid, and maintaining personal hygiene.
- ***Respect for others and human rights:*** through showing respect and support for people with sensory impairments while promoting healthy practices that protect everyone's well-being.

Cross cutting Issues

- ***Peace and values education:*** Encouraging respect for others' experiences and using senses to resolve conflicts (e.g.listening actively). One student gives simple instructions using English (e.g. "Touch your nose") while others follow. Discuss the value of listening carefully and not shouting or interrupting.
- ***Environment and sustainability:*** Awareness of how pollution (noise, air, waste) can harm the senses (e.g. smell and hearing). Pupils walk around the school and report in simple English: "I see dust.", "I hear loud noise.", "I smell smoke." Teacher guides a discussion on how to care for the environment to protect the senses.
- ***Gende***r: In groups of boys and girls, pupils name parts of the sensory organs (eyes, nose, ears, etc.) using flashcards and say what each organ does. Encourage respectful turn-taking and praise all voices.

• ***Inclusive education:*** Promoting awareness and respect for pupils with disabilities or sensory impairments (e.g. blindness, deafness). Pupils take turns performing simple classroom tasks with one sense blocked (e.g. blindfolded or with earplugs) and then reflect in Kinyarwanda or English:"How did it feel?", "What was difficult?", "How do people with these challenges live?"
Assessment criteria: *Assess pupils' ability to Name the five sense organs, describe their functions, practice ways to care for them, and show concern for keeping their sense organs healthy and safe.*
Materials: *Lens, wall charts, objects to produce sound or to taste.*

Topic area: The Human Body				
P4, SET	**Unit 11:** Human skeleton			**Number of periods: 8**
Key unit competence: Identify the main parts of the skeleton, explain their functions, and demonstrate how to keep bones healthy and safe.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify the main parts of the skeleton – Identify the major bones of the legs and arms. – Identify the main parts and big bones of the human skeleton.	– Draw and label the human skeleton. – Give simple first aid when someone has a bone injury. – Distinguish between the major bones of the legs and arms.	– Care routine that promotes skeletal health. – Demonstrate an understanding of the importance of the skeleton to the body. – Avoid playing dangerous games that may cause bone injuries.	– **Main parts and major bones of the skeleton** • Main parts of the skeleton (Skull, arm leg) • Major bones of the skeleton. • Bone of skull • Bones of trunk • Bones of legs and arms	– Moving some parts of the body including arms head,legs,shoulder. – Observe the wall chart and name different parts of the skeleton and draw in the exercises book. – In small groups, use the picture (diagram/ drawing) and refer to their own body to discuss the functions of the skeleton, then share with the whole class. – Make group discussions to find out good practices of maintaining the skeleton and avoiding accidents.

– Explain the function of skeleton in the body. – Describe ways to keep bones clean and healthy.	– Classify joints into movable and non-movable types and give examples of each. – Suggest daily practices for maintaining a healthy skeleton	– Be careful when helping someone with a bone injury. – Make a habit of doing exercises and eating healthy foods, especially foods rich in calcium. – Visit a doctor when needed to prevent or treat bone problems.	– **Functions of the skeletal system** – **Main types of joints** • Movable Joints • Non-Movable Joints – **Caring for the skeleton**	– Demonstration and practical activity: Practice some techniques of maintaining a healthy skeleton: sitting position, physical exercises, as part of hygiene. – Project activity: Build a skeleton model having movable joints using local material. – In small groups, use cut-outs or pictures of bones and try to arrange them on the table or floor to form a simple human skeleton shape.

Links to other subjects: *Biology*

Generic Competences:

- ***Critical thinking:*** Developed through observing, identifying, comparing, and classifying bones and joints, explaining the functions of the skeleton, and suggesting ways to prevent bone injuries and maintain healthy bones.
- ***Research and problem solving:*** Developed through investigating skeletal health practices, practicing simple first aid for bone injuries, and creating skeleton models using local materials to apply knowledge in practical situations.
- ***Cooperation, interpersonal relations and life skills:*** Developed through collaborative group activities such as discussing skeleton functions, arranging bone cut-outs, building skeleton models, and practicing safe handling of injured persons.

Basic values:

- ***Responsibility (Dignity and Integrity):*** Developed through adopting healthy habits such as regular exercise, eating calcium-rich foods, maintaining good posture, and responding appropriately to bone injuries.
- ***Hard work:*** Developed through active participation in practical activities, model construction, demonstrations, and discussions about skeletal health and safety.
- ***Respect for others and human rights:*** Developed through caring for and assisting people with bone injuries safely and respectfully while appreciating the needs of individuals with physical disabilities or skeletal conditions.

Cross cutting Issues

- ***Gender:*** Emphasize that both boys and girls have the same skeletal structure and can equally participate in physical and scientific activities related to the human body. E.g: Mixedgender groups create a labelled skeleton chart and discuss its functions.
- ***Inclusive education:*** Include all pupils, including those with disabilities, by showing that skeletal health is important for everyone and discussing how people with skeletal issues (e.g., broken bones, physical disabilities) can maintain good health.
- ***Peace and values education:*** Teach pupils to value cooperation and kindness during group activities, respecting others'views and physical differences. E.g: Teams assemble a skeleton puzzle while sharing positive words about each member.

Assessment criteria: *Assess pupils' ability to name the main parts of the skeleton, explain what it does, practice how to keep bones safe and healthy, and show care in preventing and responding to bone accidents.*

Materials: *The human skeleton model, charts, laths, wood, hard cartons, branches and bandages*

Topic area: The Human Body				
P4, SET	**Unit 12:** Muscles			**Number of periods: 8**
Key unit competence: Identify the main types of muscles, explain their functions, and demonstrate how to keep muscles strong and safe.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Point out the difference between the two main types of muscles. – List the main voluntary and involuntary muscles in the body. – Explain the function of voluntary muscles.	– Use simple ways to keep muscles strong and healthy. – Give basic first aid when someone has a muscle injury.	– Appreciate the importance of keeping muscles healthy. – Show care by doing regular safe physical exercises and eating healthy food. – Visit a doctor in case of pain or weakness in muscles.	– **Definition and types of muscles** • Definition of muscles • Types of Muscles – **Major muscle groups** • Arm Muscles • Leg Muscles • Back Muscles • Chest Muscles • Stomach (Abdominal) Muscles • Face and Neck Muscles	– Carry an activity to touch the body, contract muscles and make movements of related organs in order to discover the main muscles of the head, the trunk, legs and arms. – Read the story on muscles to answer related questions. – Create a model of voluntary muscles and joints. – Observe and discuss the functions of voluntary muscles.

– Identify common muscle injuries or accidents. – Explain how to prevent muscle injuries.	– Choose and practice safe exercises that help strengthen muscles.	– Make a habit of protecting muscles and avoiding unsafe activities.	– **Functions of voluntary muscles** – **Muscle accidents (cramps) and first aid** • Causes of muscle cramps • Signs of a muscle cramp • First aid for muscles cramps – **Caring for muscles** • Maintaining tone of a muscle • Prevention of muscle accidents	– Conduct a research and discuss good practices of maintaining muscles and avoiding accidents. – Practice physical exercises as part of hygiene of muscles. – Role-play: Simulate a first aid intervention in case of muscle accident (stretching and massage) such as a cramped muscle.
Links to other subjects: *Biology: muscles system*				
Generic Competences: • ***Critical thinking:*** Developed through comparing voluntary and involuntary muscles, explaining muscle functions, identifying causes of muscle injuries, and suggesting ways to prevent them. • R***esearch and problem solving:*** Developed through investigating muscle care practices, identifying causes of muscle cramps, practicing first aid for muscle injuries, and applying preventive measures. • ***Cooperation, interpersonal relations and life skills:*** Developed through collaborative practical exercises, role plays, and discussions on muscle care and first aid, promoting teamwork, communication, and interpersonal skills.				

Basic values:

- ***Responsibility (Dignity and Integrity):*** Developed through practicing regular exercise, eating healthy foods, protecting muscles from injuries, and seeking medical care when necessary.
- ***Hard work:*** Developed through active participation in physical exercises, practical demonstrations, and role-play activities to promote healthy habits and strengthen muscles.
- ***Commitment and resilience:*** Developed through maintaining regular exercise routines, adopting healthy lifestyles, and consistently practicing safe behaviors to keep muscles strong and healthy.

Cross cutting Issues

- ***Peace and values education:*** Cooperation and teamwork help pupils to practice respect and build social muscles alongside physical muscles. E.g: Pupils play team games where they use muscles together (e.g., tug-of-war, passing an object, jumping relay). After the game, pupils reflect with phrases like: "they help." "They play together." "No fight."
- ***Inclusive education:*** Pupils with disabilities may have different muscle functions or movement abilities. E.g: In pairs, pupils draw different types of movement (walking, using a wheelchair, lifting with a prosthetic, etc.) and label the muscles involved.
- ***Gender:*** Show that both boys and girls have the same types of muscles and can equally engage in physical activities. E.g: Can both boys and girls do sports?/ Create posters showing boys and girls running, lifting, or stretching muscles.

Assessment criteria: *Assess pupils' ability to name the main types of muscles, explain what muscles do, practice safe exercises to keep muscles strong and show care in protecting their muscles from injuries.*

Materials: *The human muscles model, charts*

6.3. Science and Elementary Technology of Primary Five (P5)

6.3.1. General competences

At the end of P5, the following main competences would be achieved:

- Name different carpentry tools, explain how to use and care for them, use them safely in simple tasks and show responsibility and interest in safe carpentry work.
- Name masonry tools, explain how to use and care for them, handle them safely during simple tasks and show responsibility in using and maintaining masonry tools.
- Describe how light moves and behaves, perform simple experiments to observe how light travels, reflects, and bends, and show interest by exploring light in their surroundings.
- Identify different types of computer memory and storage and their uses in storing information both offline and online.
- Insert table and pictures in a document
- Use a computer and internet tools to identify reliable sources, search for information and apply the information appropriately in learning tasks.
- Use Turtle Art, Scratch, and robotics to solve math problems, draw shapes and patterns, tell digital stories and create fun projects using code.
- Explain the importance of water, show how to keep water clean and safe, practice ways to protect the environment

from rainwater damage, and show care for water sources in the community.

- Explain how to prepare soil and use fertilizers properly, practice soil preparation and fertilizer use, and show respect and care for fertilizers to protect crops and the environment.
- Name and explain uses of crops and trees, describe causes and effects of deforestation, practice caring for trees, and show willingness to protect and care for the environment.
- Identify the parts and functions of the digestive system, explain the stages of digestion, apply hygiene practices and show positive habits to keep their digestive system healthy.
- Define different types of diseases, identify common diseases in the community, explain ways to prevent them, recognize symptoms, and show positive attitudes by practicing and promoting disease prevention.
- Explain how electricity is made and why it is important, identify sources and parts of electric circuits, build and manage simple circuits, and show safe habits when working with electricity.
- Classify materials as metals or non-metals based on their properties, calculate their density and demonstrate the changes of state of matter.

6.3.2.Table units for Primary 5

Topic area: Tools & Object production				
P5, SET	**Unit 1:** Carpentry tools			**Number of periods: 6**
Key unit competence: Name common carpentry tools, explain their uses, and demonstrate their safe use and care.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify common carpentry tools. – Explain what each tool is used for. – Describe how to take care of carpentry tools.	– Work in groups to differentiate various carpentry tools according to their various usages. – Practice the activity of fixing and removing nails from the wood.	– Work in groups to differentiate various carpentry tools according to their various usages. – Practice the activity of fixing and removing nails from the wood. – Practice the use of carpentry tools carefully and safely.	– **Identification of carpentry tools:** Work bench, wood saw, T-square, claw hammer, mallet, plane, wood chisel, axe, screw driver, brace, clamp/Jointer, rule, bow saw, spirit level, auger bits, table saw, shaper, spoke-shave.	– Work in groups to differentiate various carpentry tools according to their various usages. – Practice the activity of fixing and removing nails from the wood. – Visiting a wood / timber workshop and practice the usage and maintenance of carpentry tools.

– Describe the dangers of carpentry tools. – Explain how to stay safe when using carpentry tools.	– Wear and use personal protective equipment (PPE) like gloves or safety goggles correctly.	– Show interest in carpentry and in making furniture or other wooden items – Show a responsible attitude by replacing worn-out parts of carpentry tools. – Show familiarity in using carpentry tools – Show interest in making furniture or wooden items. – Become confident in using carpentry tools during class activities.	– **Use and maintenance of some of carpentry tools:** Work bench, wood saw, T-square, claw hammer, plane, axe, screw driver, brace, clamp/ Jointer, bow saw, spirit level. – **Dangers of carpentry tools and health and safety measures:** Dangers of carpentry tools: table saw, chisel, clamp/jointer, shaper Health and safety measures	– Make a role play to wear protective equipment. – Play a carpentry tools matching game to match tool names with pictures or real tools. – Listen to a demonstration and real-life experiences from an experienced carpenter about safe use of tools and accident prevention. – Make a simple wooden key holder.
Links to other subjects: *Construction, Mathematics (Measuring length and angles), Creative Arts (decorative elements),*				
Generic competences • ***Critical Thinking:*** Pupils compare and classify different carpentry tools according to their uses and characteristics. • ***Creativity and Innovation:*** Pupils apply their knowledge and ideas to solve practical challenges during carpentry activities. • ***Communication (Literacy and Numeracy):*** Pupils discuss different carpentry tools and share their findings during group activities.				

Basic Values

- ***Self-Reliance;*** Pupils develop confidence in using carpentry tools and completing simple practical tasks independently.
- ***Hard Work:*** Pupils show commitment and effort while practicing carpentry activities and producing quality work.
- ***Dignity and Integrity:*** Pupils demonstrate honesty and responsibility when handling tools and materials.

Crosscutting issues

- **Financial education:**
  - Learners should be taught the proper use and care of tools to avoid damage or loss, as tools are costly.
  - Carpentry can provide a source of income and contribute to personal and national wealth.
- **Inclusive education:**
  - All learners, regardless of gender, disability, or ability, should be supported. For learners with disabilities: Let them sit close to the board, use touch for learning, and interact freely with others.
  - ***Fast learners:*** Give them more tasks, practical work, and challenging questions. Slow learners: Pair them with fast learners, involve them actively, give them more time, and offer remedial support.
- **Environment and sustainability:**
  - Teach learners to use tools in protecting the environment and encourage environmental conservation.

Standardization culture:

- Promote appreciation for high-quality tools and products, as they are durable and safer.

- **Gender education:**
  - Ensure equal opportunities for boys and girls. Leadership and roles should be based on ability, not gendeR

Assessment criteria: *Assess pupils' ability to name different carpentry tools, explain how to use and care for them, use them safely in simple tasks, and show responsibility and interest in safe carpentry work.*

Materials: *Work bench, wood saw, T-square, claw hammer, mallet, plane, wood chisel, axe, screw driver, brace, clamp table saw, shaper, spoke-shave, bow saw, spirit level, auger bits, Sandpaper, piece of wood, Scissor*

Topic area: Tools and object production				
P5, SET	**Unit 2:** Masonry tools			**Number of periods: 6**
Key unit competence: Identify common masonry tools, explain their uses, and demonstrate their safe use and care.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify masonry tools. – Explain the use of masonry tools. – Describe dangers of using masonry tools. – Explain how to avoid accidents when using masonry tools	– Clean and store masonry tools properly. – Handle and use masonry tools correctly and safely in simple class or group activities. – Maintain masonry tools.	– Show interest in masonry work and how it helps in building. – Take care of masonry tools by replacing or reporting worn-out parts. – Become familiar and confident when using basic masonry tools.	– **Identification of masonry tools:** Water level, trowel, plumb line, spirit level, float, meter ruler, tape measure, jointer, brick frame, wheelbarrow, T-square, shovel, hoe, brick hammer, mortar mixer. – **Use and maintenance of some of masonry tools:** • Use of masonry tools;	– Work in group to differentiate various masonry tools according to their various usages. – Organize a masonry tools matching activity where learners match tool names to pictures or real tools.- Conduct a "mystery tool" challenge where students identify tools by touch while blindfolded (with safety precautions).

			Water level, trowel, plumb line, float, meter ruler, tape measure, jointer, brick frame, wheelbarrow, T-square • Maintenance of masonry tools – **Dangers of masonry tools and health and safety measures:** • Dangers of masonry tools • Health and safety measures	– Practice spreading mortar on a small board or leveling a block. – Identify and correctly wear personal protective equipment (PPE) used in masonry. – Demonstrate how to clean masonry tools after use. – Visiting a construction sites and practice to use some masonry tools. – Invite an experienced mason to demonstrate proper tool use and share real-life experiences about safety and maintenance.
Links to other subjects: *Agriculture: tools*				
Generic Competences • ***Critical Thinking:*** Pupils compare different masonry tools and classify them according to their uses. • ***Research and Problem Solving:*** Pupils gather information from books, demonstrations, and experienced masons about the use and maintenance of tools. • ***Cooperation, Interpersonal Relations and Life Skills:*** Pupils work together during group activities to identify, use, and maintain masonry tools.				

Basic Values

- ***Self-Reliance:*** *Pupils develop confidence in handling basic masonry tools and completing simple construction tasks.*
- ***Hard Work:*** *Pupils demonstrate effort and commitment during practical masonry activities.*
- ***Dignity and Integrity****: Pupils handle masonry tools responsibly, follow safety instructions, and respect school equipment.*

Cross-Cutting Issues

•Financial Education

- *Learners to acquire knowledge on the maintenance of masonry tools. The teacher should enlighten the learners that there is need to take care of the masonry tools because they are expensive.*
- *Looking after tools means you can save money which can be spent on other things.*

• Inclusive Education

- *Learners of all abilities should be involved in various learning activities. The learners with disabilities should be included in group activities. Learners with physical challenges should be assigned the activities that they can handle.*

Assessment criteria: *Assess pupils' ability to use and maintain masonry tools*

Materials: *Range of masonry tools: Water level, trowel, plumb line, float, meter ruler, tape measure, jointer, brick frame, wheel barrow, T-square, shovel, hoe, brick hammer, mortar mixer*

Topic area: Tools & Object production				
P5, SET	**Unit 3:** Light			**Number of periods: 10**
Key unit competence: Describe how light travels and behaves and demonstrate safe and responsible behaviours when using and interacting with sources of light.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Discuss how light moves – Demonstrate how light passes through different materials. – Identify different types of materials: transparent, translucent, and opaque.	– Watch and describe how light moves or travels. – Do experiments to show light passing through materials. – Plan a simple experiment to see how light bounces off surfaces (reflection) and bends when it goes through water or glass (refraction). – Use water and a flat mirror to explore how light reflects and bends.	– Pay attention and be curious about how light travels. – Sort materials based on how much light they let through. – Explore places around you to see light reflecting and bending in nature.	– **Meaning of light propagation** – **Types of media for light propagation:** • Transparent media • Translucent media • Opaque media – **Reflection of light** – **Refraction of light**	– In group, collect cardboards and a torch, to experiment on how light travels in a straight line. – Make the torch's light hit the target on wall of classroom. – In group, discuss on classifying materials based on how they allow light to pass. – Collect different materials to investigate how the light travel through different media.

– Explain how light travels in a straight line (light propagation). – Describe the basic laws of light. – Define reflection and refraction and give simple examples from daily life.	– Demonstrate how light travels using a torch and holes in paper or card. – Classify materials based on how much light they allow to pass through. – Perform a simple experiment to observe light refraction in water. – Draw simple diagrams to show how light bends during refraction.	– Show interest and curiosity in learning about how light works. – -Respect safety rules when using light sources and materials. – Appreciate the importance of light in daily life and its role in helping us see.		Collecting different materials (water, pencil, plane mirror), to carry out experiment about reflection and refraction. – Conduct a shadow experiment using a torch and objects of different shapes and sizes to observe light blockage. – Perform a "bending pencil in water" experiment to visually demonstrate refraction.
Links to other subjects: *Mathematics, Creative Arts, English, ICT and Social Studies*				
Generic Competences • **Critical Thinking:** Pupils analyze the results of simple experiments on light propagation, reflection, and refraction. • **Creativity and Innovation:** Pupils design and perform simple experiments to explore how light travels and behaves. • **Research and Problem Solving:** Pupils collect and investigate different materials to understand how light interacts with them.				

Basic Values

- **Self-Reliance:** Pupils develop confidence in carrying out simple light experiments and making observations independently.
- **Commitment and Resilience:** Pupils remain dedicated when performing experiments and continue learning from mistakes.
- **Dignity and Integrity:** Pupils follow safety rules when using light materials and respect others during practical activities.

Cross-Cutting Issues

•Financial education:

Light is essential, and while the sun is free, artificial light (like electricity) costs money. Learners should understand the value of light and be taught to use and conserve it wisely due to its cost.

• Inclusive education:

All learners, including those with disabilities, should participate in learning activities. Assign duties that match each learner's ability to promote inclusion.

• Gender education:

Boys and girls should be treated equally in group work and duty sharing. Promote fairness and equal participation in class activities.

Assessment criteria: *Assess pupils' ability to explain, classify, and demonstrate concepts related to light propagation, types of media, reflection, and refraction using simple and clear responses and actions.*

Materials: *Clear glass of water, pencil or straw,* mirror, *torch, white paper,* glass, *plastic bag, paper, metal spoon, cloth, water bottle, torch (flashlight), 3 pieces of cardboard with holes in the center, table, nail, Clear polythene paper*

Topic area: ICT				
P5, SET	**Unit 4:** Computer memories and storages			**Number of periods: 8**
Key unit competence: To be able to identify different types of computer memory and storage and their use in storing information both offline and online.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the concept of data, memory and storage and data sharing. – Identify the different computer memories and storages found inside and outside the computer. – List the different memory units and their relationships in terms of size.	– Use different types of storage and memory devices. – Type, save and open a document from internal storage. – Insert and remove a flash disk/memory stick from the computer. – Copy a document from a flash disk to a Journal/	– Show interest and care when using storage devices. – Follow safety rules when handling storage devices. – Appreciate the use and flexibility of external storage in a computer.	– **External storage** • Definition of external memories • Examples of external storage and their use (Memory card, flash disk, USB Hard disk, CD/DVD) • Size of external storage • Importance of using external storage • Proper use of external storage – **Internal memories and storages**	– In groups discuss the different memories and storages and the difference between the two. – In group, discuss the different external storages and how to take care of them. – Insert a flash disk into a computer and check its size.

– Explain the importance of using external storage devices. – Describe how to care for and use external storage properly. – Explain how to check the size of internal memory in a computer. – Explain Google Drive and its use. – State how to change one memory unit to another.	– computer and vice versa – Check the size of external storage using a computer. – Check available memory and storage on a computer or mobile device. – Open Google Drive and upload a file. – Convert from one memory size to another.	– Be excited on how data is kept in storage. – Use both internal and external storage correctly during tasks	• Definition internal memories • Types (RAM and ROM) • Example of internal storage (hard disk, SSD) • Proper use of internal memories and storage) • Checking the size of internal memories – **Online storage** • Definition and examples (Google drive, Dropbox, OneDrive) • Importance of online storages • Opening Google Drive – **Memory size** • Memory units • Change one memory unit to another	– Create a poster showing 3–5 ways to take care of external storage devices. – Given a printed computer diagram, pupils label RAM, ROM, Hard Disk, and SSD and state the role of each in a computer. – Give examples of online storages, sign in to Google Drive and upload a file. – In group, explain the relationship between different memory units and convert memory units.

Links to other subjects: Mathematics /Art / drawing, English /
Generic Competences • ***Critical Thinking:*** Pupils compare different types of computer memories and storage devices according to their uses and capacities. • ***Communication (Literacy and Numeracy):*** Pupils discuss different storage devices and share their ideas during group activities. • ***Research and Problem Solving:*** Pupils apply their knowledge to solve problems related to saving, sharing, and managing data.
Basic Values • ***Self-Reliance:*** Pupils develop confidence in managing files, using storage devices, and performing basic computer tasks independently. • ***Responsibility:*** Pupils handle computer memories and storage devices carefully to avoid damage or loss of information. • ***Solidarity and Democracy:*** Pupils cooperate during group activities and share knowledge about computer storage devices.
Cross-Cutting Issues • ***Environment and sustainability:*** Discuss the environmental impact of disposing of old storage devices like CDs or hard drives and come to a conclusion that electronic wastes must be managed well • ***Financial education:*** Compare the cost of different memories and storages and conclude which ones are cost effective. Also discuss the importance of having additional external memories.
Assessment criteria: *Assess pupils' ability to list different memories and storages,* ***s****tore data in different devices and manage data sharing effectively*
Materials: *XO laptop, CDs, DVDs, Flash disk, SD Card, desktop computers or laptops with internet connectivity.*

Topic area: ICT		
P5, SET	**Unit 5:** Writing skills on computer	**Number of periods: 8**

Key unit competence: To be able to Use a Word processing program to create and edit tables, insert and arrange pictures in a document.

Learning objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Distinguish between columns and rows of a table. – Identify how to extend the length of a column and the height of row, and increase/ decrease the number of rows or columns. – Explain how to insert, resize, position and remove a photo in the Word document.	– Create a table with a specific number of rows and columns. – Add and edit data into a table. – Edit the table by adding or deleting columns and rows. – Insert pictures/ diagrams and perform editing – Insert a picture or image into a document from a file or device.	– -Appreciate the way tables keep data. – Care for the number of rows and columns that make up a table. – Appreciate the use of tables, pictures and images in a word document to summarize and illustrate information.	– **Inserting a tables** • Steps to insert a table – **Add rows and columns** • Row • Column – **Delete row and column** • Delete a row or column • Deleting an entire table – **Inserting, resizing and removing a picture**	– Create tables with a specified number of rows and columns and type text into it. – Practical activity On deleting, adding and resizing rows and columns. – Practical activity on inserting images and resizing photos and images.

– Explain the importance of using tables and pictures to organize and illustrate information.	– Resize and move the image to the right place in the document. – Delete a picture or table from a document when not needed.	– Work neatly and carefully when using tables and pictures in documents.	• Inserting pictures • Resizing a picture • Removing a picture	– Work in group to create and edit a school or community newspaper.
Links to other subjects: *Mathematics, English, Social Studies, Art and Craft, Kinyarwanda.*				
Generic Competences • ***Creativity and Innovation:*** Pupils explore different ways of organizing and presenting information using digital tools. • ***Communication (Literacy and Numeracy):*** Pupils apply knowledge of rows, columns, and measurements when editing tables. • ***Cooperation, Interpersonal Relations and Life Skills***: Pupils work together when creating and editing documents with tables and pictures.				
Basic Values • ***Self-Reliance****: Pupils develop confidence in using computers and the internet to search for information independently.* • ***Dignity and Integrity****: Pupils use online information honestly by respecting intellectual property and avoiding plagiarism.* • ***Respect for Others and Human Rights:*** *Pupils communicate respectfully and kindly when using social media and online platforms.*				

Cross-Cutting Issues

- ***Peace and values education****: Make pupils understand that while communicating online, they have to be respectful of others use polite language and avoid cyberbullying. Pupils must be encouraged to report unsafe or inappropriate content.*
- ***Financial education:*** *Make pupils understand that there is nothing free in this world and that they have to work hard for their financial freedom. Pupils must be able to identify fake offers or scams online, such as "Click to win a free phone," which are often attempts to steal information or money. Explain that there are online frauds which can result in losing money*

Basic Values

- ***Self-Reliance****: Pupils develop confidence in creating, editing, and managing documents independently.*
- ***Hard Work:*** *Pupils practice consistently to improve their skills in inserting and editing tables and pictures.*

Cross-Cutting Issues

- ***Financial Education****: Make pupils understand that tables are used in organizing financial information such as budget list, shopping list. Make them get the habit or arranging their financial information in tables for clarity*
- ***Standardization Culture:*** *Pupils discover that for a table has to have rows and columns and that those have a certain dimension so that they are visible*

Assessment criteria: *Assess pupils' ability to* ***i****nsert and manipulate tables and images in document.*

Materials: *Desktop or laptop computers with word processing software installed.*

Topic area: ICT				
P5, SET	**Unit 6:** Computer research			**Number of periods: 8**
Key unit competence: To be able to use a computer and internet tools to identify reliable sources, search for information and apply the information appropriately in learning tasks.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define common internet terms. – Describe what online research is and list examples of search engines. – Identify learning resources available online. – Explain internet safety practices.	– Use a search engine to locate accurate and relevant information online. – Use web-based tools such as Google Maps and Khan Academy. – Access and read online learning resources like e-textbooks and maps.	– Show curiosity and responsibility when exploring and using the internet for research. – Appreciate the usefulness of online information and tools in learning.	– **Terms used on the Internet** WWW, Web Page, Website, Home Page, Web browser, Links, Download, Upload, Internet, Online, Wi-Fi, social media. – **Internet security** • Definition • Creating strong passwords • Computer viruses • Security when using the internet	– In groups, discuss the meaning of common internet terms. – Exercises on navigating the internet to locate resources – Find a world map and locate the East African countries on the map. – Open a web browser and search for a simple topic using a search engine.

– -Explain how to stay safe when using the internet and social media. – -Describe the good and bad effects of using social media. – -List some learning resources like websites, apps, and textbooks that can be found online.	– Navigate websites and browse the internet responsibly. – Type and search for information using a search engine like Google. – Use social media in a good and safe way.	– Demonstrate respect and kindness when using the internet and social media. – Appreciate the importance of online safety by valuing privacy and protecting personal information – Be honest and not copy other people's work when doing online research.	– **Social media** • Definition • Use of social media • Impact of social media • Risks and dangers of social media • Stay Safe on Social Media – **Online research** • Steps for effective online research • Search engines – **Search engine techniques** • Good search techniques • Steps to use a search engine – **Access to learning resources** • Websites maps and school textbooks • Apps for learning • Steps to access learning resources online	– Practice typing search keywords correctly in a search engine. – Discuss with peers why it's important to use strong passwords and be kind online. – Work in a group to act out a scene about staying safe on social media. – Watch a short video about internet safety and then discuss key points with a partner.

Links to other subjects: *Social studies (Mapwork), Mathematics (online chart), English*

Generic Competences

- ***Critical Thinking***: Pupils evaluate online information and identify reliable sources for learning.
- C***ommunication (Literacy and Numeracy):*** Pupils present information collected from online learning resources using appropriate ICT vocabulary.
- ***Research and Pro***blem ***Solving:*** Pupils use search engines and online learning resources to find information for learning tasks.

Basic Values

- ***Self-Reliance:*** Pupils develop confidence in using computers and the internet to search for information independently.
- ***Dignity and Integrity:*** Pupils use online information honestly by respecting intellectual property and avoiding plagiarism.
- ***Respect for Others and Human Rights:*** Pupils communicate respectfully and kindly when using social media and online platforms.

Cross-Cutting Issues

- ***Peace and values education:*** Make pupils understand that while communicating online, they have to be respectful of others use polite language and avoid cyberbullying. Pupils must be encouraged to report unsafe or inappropriate content.
- ***Financial education:*** Make pupils understand that there is nothing free in this world and that they have to work hard for their financial freedom. Pupils must be able to identify fake offers or scams online, such as "Click to win a free phone," which are often attempts to steal information or money. Explain that there are online frauds which can result in losing money

Assessment criteria*: Assess the ability to navigate the internet safely and locate the needed learning resources, explain the benefits and dangers (when not well used) of using the internet and social media.*

Materials: *Computers, smartphones or tablets, internet connectivity, projector, speakers.*

Topic area: ICT				
P5, SET	**Unit 7:** Programming for children			**Number of periods: 12**
Key unit competence: Use programming languages to control the movement of a sprite or a simulated robot.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain how Turtle Art can be used to draw geometric shapes. – Associate Turtle Art instructions with arithmetic operations to perform calculations. – Associate different commands to make Scratch projects.	– Design and apply a new background for a Scratch project. – Choose and add sound blocks to a Scratch program. – Use PictoBlox blocks to program a robot to move forward, turn, or stop.	– Express the desire to draw more colourful drawings using Turtle Art commands. – Be confident about the process of creating dialogues and cartoons. – Show curiosity and interest when using	– **Perform arithmetic operations in Turtle Art** • Arithmetic operations (addition, subtraction, multiplication, division) • Turtle Art instructions for Math • Using variables • Order of operations	– In group, make discussion on doing calculations in Turtle Art including calculating areas and perimeters of a shape. – Practice drawing shapes by sequencing the blocks correctly. – Draw a rhombus, parallelogram, or trapezium by dragging and connecting blocks. – Use tools like brush, fill, text, and eraser to draw or edit a sprite or

– Name the main tools in the Scratch Paint Editor. – Associate different commands to make a dialogue/ cartoon. – Identify and describe complex shapes: rhombus, parallelogram, and trapezium. – Explain why sound is used in a Scratch project. – Identify the different blocks used to program Tobi robot and explain their uses. – Describe what a robot can do and how to program it to move.		coding tools like Turtle Art and Scratch. – Be creative when drawing shapes or designing backgrounds. – Show patience and focus when solving math problems or fixing errors in code. – Be careful and accurate when giving instructions to a robot or using variables. – Use sound and music respectfully, avoiding loud or inappropriate content. – Show confidence when trying new coding tools and ask for help when needed.	– **Drawing complex shapes in Turtle Art** • Drawing a rhombus • Drawing a parallelogram • Drawing a trapezium – **Using Paint editor in Scratch** • The main tools in Paint editor • Designing a custom background – **Using sound and music in Scratch projects** • Purpose of using sound in Scratch project • Use sound in Scratch • Application activity – **Programming a robot** • Definition of terms • Program for moving Tobi robot in Pictoblox	background and design a background in Paint. – In Pairs or individually work on exercises to create dialogues according to a given topic (corruption, child abuse, drugs, health, sport environment). – Practice creating and changing the backgrounds, choosing sprites and inserting sound in project work. – Individually, select a sound to improve project and add it to a sprite or event. – Use PictoBlox to program a robot for simple movements.

Links to other subjects: *Mathematics, Social studies, Art and Creative Design, English*
Generic Competences • ***Critical Thinking:*** Pupils compare different coding blocks and select the most appropriate commands to create shapes, animations, and robot movements. • ***Creativity and Innovation:*** Pupils apply coding skills to develop simple projects that solve problems in creative ways. • ***Research and Problem Solving:*** Pupils explore different coding tools and blocks to complete programming tasks.
Basic Values • ***Self-Reliance:*** Pupils develop confidence in creating coding projects, solving programming challenges, and using digital tools independently. • ***Hard Work:*** Pupils demonstrate persistence and commitment when creating, testing, and improving coding projects. • S***olidarity and Democracy:*** Pupils cooperate during coding activities by sharing ideas, supporting classmates, and working together to solve programming challenges.
Crosscutting issues • ***Financial education:*** Make the pupils discover that using software such as the ones they make can help in save money because by using software the work is done quickly and with less human work. Let them discover that making software generate financial resources. Let pupils simulate bank loan interests by using programming in Turtle Art or Scratch. • ***Gender equality:*** Ensure equal participation of both girls and boys and make them understand that programming both girls and boys can be good programmers.
Assessment criteria: *Assess pupils' ability to perform arithmetic operations, draw geometric shape, create dialogue and cartoons using Scratch and program Tobi robot in* PictoBlox.
Materials: *Computers with Scratch and Turtle Art installed, speakers or headphones,* p*rojector and screen, drawing materials, Turtle Art software, PictoBlox software, Paint Editor (in Scratch).*

Topic area: Our environment				
P5, SET	**Unit 8:** Water pollution			**Number of periods: 14**
Key unit competence: Explain the importance of water, demonstrate how to keep it clean and safe, and promote the protection of water sources and the environment.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the good and bad effects of rainwater. – Identify the dangers of rain water and how to prevent them. – Explain methods of protecting the environment from rain water.	– Make a simple water filter using sand, gravel, and -Clean water by using filtration, boiling, and treatment tablets. – Plant trees and dig ditches to stop rainwater from damaging the environment.	– Develop positive attitude to the environment and protection of water sources from pollutants. – Appreciate the importance of water hygiene as a way to avoid diseases. – Appreciate the need for good habit to keep and conserve clean water.	– **Importance of water** • Water for human nutrition • Water in sanitation • Water for farming • Water within industries – **Sources of water** • Natural sources of water • Man-made sources of water. – **Properties of water**	– In group, make a discussion to identify the importance of water; – Field visits and group discussions to identify various sources of water; – In group, make an activity to investigate and discover the properties of water; – In group activity, demonstrate a simple water cycle. – Plant trees and make ditches in the school surrounding.

– Explain dangers of polluted water. Differentiate methods of water purification. – Explain different water storage techniques. – Name the causes of water pollution.		– Practice ways to avoid water pollution. – Develop positive attitude towards avoiding stagnant water as a way to control waterborne diseases. – Show concern about the protection of the environment	– **Simple water cycle and rainwater** – **Effects of rainwater** • Positive effects of rainwater • Negative effects of rainwater – **Methods of protecting the environment from the negative effect of rainwater** • Planting trees • Making terraces • Making ditches • Cultivating anti-erosive plants – **Water pollutants** • Human and animal wastes • Floods/run-off water • Waste from factories • Farm chemicals – **Dangers of water pollution** • Dangers of water pollution for human beings.	– Design and make a solution to prevent the flooding of the ground from heavy rain water. – Field visits and group discussions to outline **effects of rainwater** on the environment. – Field visits and group discussions to discover pollutants of water. – Test water samples from different sources to observe clarity, smell, and presence of particles. – In group, discuss the dangers of water pollution and ways of preventing it. – Group, conduct a practical activity on purification of water by boiling and using chemical treatment method. – Perform an experiments of making a domestic filter and practicing filtration. – In group, discuss ways of storing water.

			• Dangers of water pollution for animals. • Dangers of water pollution for plants. • Dangers of water pollution for soil. – **Prevention of water pollution** – **Water purification methods** • Boiling water • Filtration of water • Chemical treatment of water (chlorination) – **Making a water filter** – **Water storage**	– Create posters or models illustrating the simple water cycle and its importance for humans, animals, and plants. – Participate in a mini-debate or group discussion on human activities that harm water and ways to prevent them. – Visit a local water treatment plant (if available) to observe water purification in real life. – Design and implement simple terraces or anti-erosion measures in the school garden to prevent runoff.
Links to other subjects: *Social studies, chemistry, agriculture and geography*				
Generic Competences • ***Critical Thinking:*** Pupils compare different methods of water purification and determine the most suitable method for different situations. • ***Research and Problem Solving:*** Pupils apply their knowledge to suggest practical ways of protecting water sources and preventing soil erosion. • ***Cooperation, Interpersonal Relations and Life Skills***: Pupils develop teamwork and responsibility when protecting water sources and the environment.				

Basic Values

- ***Hard Work:*** Pupils actively participate in practical activities such as planting trees, making ditches, and purifying water.
- ***Patriotism:*** Pupils participate in community activities that promote environmental conservation and sustainable use of water.

Crosscutting issues

• Financial education:

Learners should understand the importance of water as a valuable resource. They should conserve it by using it sparingly, reusing it where possible (e.g., rinsing water used for mopping), and turning off taps when not in use.

. Standardization culture:

Learners should use clean water for daily activities like washing and bathing, and drink only boiled or treated water stored in clean containers. They should also learn to recognize and avoid polluted water.

. Inclusive education:

During activities like field visits, support learners with disabilities by helping them move or providing wheelchairs. All learners should interact equally and understand the importance of including people with disabilities in society.

. Environment and sustainability:

Learners should understand the effects of water pollution and be encouraged to protect water sources. They should also learn the role of trees in the water cycle and engage in tree planting to conserve the environment.

Peace and values education:

Learners should practice sharing materials peacefully and understand that resource related conflicts (e.g., over water or land) can be avoided through cooperation. They should be taught values such as tolerance, empathy, and love.

Assessment criteria: *Assess pupils' ability to purified water for drinking and school environment protected from rainwater*

Materials: *water, chemicals for water treatment, small gravel, clean sand, coarse sand, charcoal, clean cotton tissue, paper filter, beaker, plastic bottle, glass jar, table salt, teaspoon or spatula, saucepans, source of heat, shovel, hoe, cloth, funnel, watch, clean jerrycan, sharp kitchen knife,* Cotton wool

Topic area: Our environment				
P5, SET	**Unit 9:** Soil and cultivation			**Number of periods: 6**
Key unit competence: Explain soil preparation and proper fertilizers use, and demonstrate responsible practices to protect crops and the environment.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify steps of soil preparation for cultivation. – Explain the importance of fertilizers. – Identify rules of applying fertilizers.	– Prepare soil ready for planting. – Choose the right fertilizers. – Make organic fertilizers. – Use fertilizers correctly.	– Respect the sequence of steps of preparation of soil for cultivation. – Show care when using fertilizers. – Appreciate the importance of fertilizers in our environment. – Show concern for dangers of the bad use of fertilizers	– **Preparation of soil for cultivation** • Land clearing, • Ploughing (Primary cultivation) • Second cultivation (harrowing) • Levelling (seed bed preparation). – **Fertilizers and their preparations**	– Practical and hands-on activity: In the school garden, preparing plots where to cultivate vegetables. – In group, discuss the classification of fertilizers. – Practical group work: Assign to each group to prepare one type of organic manures. – In group, make investigation on the effect of a specific type of fertilizer on the plant growth (long term project). – Design a device that spread the fertiliser or manure on the garden plot (Engineering prosess) .

		– and its effects on crops production and plant health.	• Types of fertilizers (Natural fertilizers and Chemical *fertilizers)* – **Importance of fertilizers and rules of applying fertilizers** • Importance of fertilizers • Rules of applying organic fertilizers	– In a group work: visit nearby farm and carry out research on precautions during the use of fertilizer. – Conduct a demonstration of composting using kitchen and garden waste to create organic fertilizer. – Invite a local farmer or agronomist to demonstrate best practices in soil preparation and fertilization.
Links to other subjects: *Mathematics (Measuring land area), English, Social and Religious Studies (avoiding land degradation), Creative Arts*				
Generic Competences • **Critical Thinking:** Pupils investigate the effects of fertilizers on plant growth and draw conclusions from their observations. • **Research and Problem Solving:** Pupils apply knowledge gained from experiments and observations to improve crop production. • C**ooperation, Interpersonal Relations and Life S**kills: Pupils work together in groups to prepare soil, make organic fertilizers, and conduct investigations.				
Basic Values • Hard Work: Pupils actively participate in soil preparation, compost making, and crop cultivation activities. • Self-Reliance: Pupils develop confidence in preparing soil, producing organic fertilizers, and growing crops.				

Crosscutting issues

- **Environmental and sustainability:**

Soil is vital for plants and animals. Environmentally friendly land preparation should be practiced, such as using organic fertilizers and limiting chemical fertilizers to prevent pollution. Proper regulations should be followed when using chemicals.

- **Peace and values education:**

As land is a valuable and limited resource, especially with growing populations, learners should be taught to share land fairly and respect others' property to promote peace.

- **Gender education:**

Teachers should avoid gender bias and encourage equal participation from both boys and girls in all lesson activities.

- **Inclusive education:**

Learners with special needs should be included in activities, given appropriate responsibilities, and supported patiently to ensure full participation.

Assessment criteria: *Assess pupils' ability to explain how to prepare soil and use fertilizers properly, practice soil preparation and fertilizer use, and show respect and care for fertilizers to protect crops and the environment.*

Materials: *Agriculture tools, manure and fertilizers, small containers, soil, chemical fertilizer (if available), Bean seeds or plant seedlings, water, tape measure, watering can, farmyard manure, Wood ash, Top soil, Degradable (which rot easily) plant material and banana peelings, Viable maize seeds or bean seeds Compost manure*

Topic area: Our environment				
P5, SET	**Unit 10:** Plants and environment			**Number of periods: 10**
Key unit competence: Identify crops and trees, explain their uses, describe the causes and effects of deforestation, and demonstrate care for trees and the environment.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the uses of trees. – Discuss the uses of different types of crops. – Discuss the causes and effects of deforestation. – Explain ways to take care of trees. – Describe the causes and effects of deforestation.	– Recognize the types of crops. – Observe and describe different uses of trees. – Classify the types of crops according to their uses – Analyze different ways of caring for trees.	– Show a strong desire to protect trees. – Show concern on how to fight against causes and effects of deforestation. – Agree to protect and care for the existing trees.	– **Importance of plants** • Food crops • Cash crops • Animal feed • Medicinal plants – **Importance of trees in the environment** • For weather conditions • For control of soil erosion • For recycling air • For wild animals and birds	– In group, discuss the importance of plants according to their groups. – In group, discuss the importance of afforestation on environment. – In group, make a field visit nearby the school and investigate the causes and effects of deforestation. – In groups, organize an activity of planting trees in the school surrounding to protect the environment.

	– Differentiate between afforestation and deforestation		– **Afforestation and deforestation on the environment** • Afforestation • Deforestation – **Effects and prevention of deforestation** • Effects of deforestation • Prevention of deforestation	– Conduct a tree identification activity in the school compound or nearby area, noting their uses and benefits. – Organize a group debate or discussion on the impact of deforestation versus afforestation. – Invite a local environmentalist or forestry officer to speak about forest conservation and sustainable practices.
Links to other subjects: *Social and Religious Studies (Caring for the environment), Creative Arts (posters about protecting the environment), Mathematics (Measuring distances for tree planting)*				
Generic Competences • **Creativity and Innovation**: Pupils develop creative ideas for caring for plants and improving the environment around their school and community. • Communication (Literacy and Numeracy): Pupils describe the causes and effects of deforestation using appropriate environmental vocabulary. • **Lifelong Learning:** Pupils develop interest in continuously learning about plants, trees, and environmental protection.				

Basic Values

- **Respect for Others and Human Rights**: Pupils appreciate the importance of working together and respecting others' ideas during environmental conservation activities.
- **Solidarity and Democracy**: Pupils participate in group discussions, share responsibilities, and make decisions together on ways to protect plants and trees.
- **Commitment and Resilience:** Pupils continue practicing environmental conservation activities and learn from mistakes when caring for plants.

Crosscutting issues

- **Environmental conservation**
- Teach learners to protect and preserve plants and natural habitats. Emphasize the role of trees in preventing soil erosion, cleaning the air, and regulating climate. Encourage tree planting and discourage deforestation.
- **Peace and values education:**
- Forests are valuable resources that support peace and development. Sharing and protecting natural resources promotes harmony.
- **Gender education:**
- Both boys and girls should take equal responsibility in conserving the environment. Teachers should promote environmental awareness for all genders.

Assessment criteria: *Assess their ability to name and explain the uses of crops and trees, describe the causes and effects of deforestation, actively participate in caring for trees, and show a positive attitude and willingness to protect and care for the environment*

Materials: *Charts/posters for plants, Pictures for plants, Seeds of crops, Projector, agriculture tools, Gloves or small gardening kits, short videos on afforestation or plant growth, Soil samples*

Topic area: The human body				
P5, SET	**Unit 11:** Human digestive system			**Number of periods: 12**
Key unit Competence:Identify the parts and functions of the digestive system, explain stages of digestion, and demonstrate healthy eating and hygiene practices.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify major parts of the digestive system. – Explain the functions of the digestive system. – Explain stages of digestion. – Identify components and elements of balanced diet.	– Recognize parts of the digestive system and their functions – Apply hygiene practices for the digestive system. – Prepare a balanced diet. – Match nutritional deficiency diseases with their symptoms	– Show appreciation for eating a balanced diet to keep the digestive system healthy. – Develop the habit of chewing food properly to care for the digestive system.	– **Parts and functions of the digestive system** • Alimentary canal • Digestive glands – **Stages of digestion** • Ingestion • Digestion • Absorption • Elimination – **Hygiene of digestion** • Ways for hygiene of digestion – **Balanced diet** • Body-building foods	– In group, observe the digestive system wall chart, draw and label it in the exercise book. – In group work, discuss on the digestion process. – In group, make a research in a library/ search engines and discussion on ways of maintaining the hygiene of digestion. – Model how human digestion works. – In group work, collect various groups of food and prepare balanced diet.

– State common nutritional deficiency diseases and discuss how to prevent them. – Explain hygiene practices for the digestive system.		– Demonstrate the habit of preparing and eating a balanced diet to prevent nutritional diseases.	• Energy-giving foods • Protective foods – **Preparation of a balanced diet** • Carbohydrates, Proteins, Vitamins, Minerals, Lipids (fats and oils), Water, Fibre (Roughage) – **Nutrition and prevention of deficiency diseases** • Kwashiorkor, Marasmus, Rickets, Goitre, Anaemia	– In pairs, observe image and discuss about children suffering from deficiency diseases. – Organize a food classification activity where students group local foods into body-building, energy-giving, and protective foods. – Invite a nutritionist or health worker to explain the importance of balanced diets and proper hygiene in digestion.
Links to other subjects: *Biology (digestive system), Social and Religious Studies (promotes health awareness), English (Reading, discussing), Mathematics (Measuring food quantities), Creative Arts (Drawing the digestive system)*				
Generic Competences • **Creativity and Innovation:** Pupils develop creative ideas for protecting trees and conserving the environment through activities such as making posters and environmental awareness messages. • **Communication (Literacy and Numeracy):** Pupils discuss the uses of crops and trees and share their findings during group presentations. • **Lifelong Learning:** Pupils develop interest in continuously learning about plants, trees, and environmental conservation.				

Basic Values

- R**espect for Others and Human Rights:** Pupils respect the environment and recognize that plants, trees, and natural resources support the wellbeing of people and communities.
- **Solidarity and Democrac**y: Pupils share responsibilities and participate actively in making decisions on how to protect trees and prevent deforestation.
- C**ommitment and Resilienc**e: Pupils continue working towards environmental conservation goals even when facing challenges during practical activities.

Crosscutting issues

- **Financial Education:**
- Learners should understand that food is costly, whether bought or grown. They should avoid food waste, practice good hygiene, and eat a balanced diet to prevent costly illnesses and loss of productive time.
- **Inclusive education:**
- Teach the importance of balanced diets to prevent diseases like rickets and marasmus. Encourage support and appreciation for peers with physical disabilities.
- **Peace and values education:**
- Learners should share their food experiences, discuss food diversity, and work in groups to prepare meals. Sharing roles promotes teamwork and peaceful coexistence.
- **Gender education:**
- Assign food preparation and collection tasks equally to both boys and girls. Promote gender equality by involving all learners in every activity, regardless of sex.

Assessment criteria: *Assess their ability to identification of digestion stages and composition of a balanced diet and practice of the digestion hygiene*

Materials: *Chart, various types of food, Soap and water, clean utensils* (*bowls, spoons, cutting board), Cooking materials, Laptop or projector*

Topic area: The human body				
P5, SET	**Unit 12:** Human diseases			**Number of periods: 6**
Key unit competence: Identify and define different types of diseases, recognize common diseases and their symptoms, explain prevention methods, and promote healthy practices.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define infectious, non-infectious and chronic diseases. – Identify common infectious, non-infectious and chronic diseases in the community. – Explain simple ways to prevent infectious, non-infectious and chronic diseases.	– Preventing different kinds of diseases by practicing good hygiene and habits. – Noticing changes in the body or behavior that could indicate illness. – Covering mouth when coughing or sneezing.	– Be aware of how to prevent diseases. – Encourage others in the community to practice disease prevention. – Adopt healthy habits and discipline to avoid getting sick.	– **Infectious diseases** • Definition • Prevention of infectious diseases – **Non – infectious diseases** • Definition • Prevention of non-infectious diseases – **Chronic diseases** • Definition • Prevention of chronic diseases	– In group work, Make a discussion on common infectious diseases. – In group activity, discussion on identification and prevention of common non-infectious diseases. – Investigate to show ways germs can spread. – In group, identify common chronic diseases and preventive measure.

– Identify common signs and symptoms of diseases.				– In pairs, discuss how lifestyle and environment – influence disease occurrence. – Invite a health worker or nurse to talk about vaccination, healthy habits, and disease prevention.

Links to other subjects: Mathematics (Data collection and interpretation), Geography (Mapping disease outbreaks and affected regions), Social Studies(Ethical issues in dealing with diseases), Language Studies(Reading and understanding), Creative Arts(Designing health education materials)

Generic Competences

- **Critical Thinking:** Pupils evaluate healthy and unhealthy habits and make appropriate decisions to prevent diseases.
- **Communication (Literacy and Numeracy):** Pupils present health messages and share ideas on how to promote disease prevention.
- **Research and Problem Solving:** Pupils apply knowledge of disease prevention to solve simple health-related challenges in daily life.

Basic Values

- **Self-Reliance**: Pupils develop the ability to make healthy choices and practice habits that prevent diseases.
- **Respect for Others and Human Rights**: Pupils support others by promoting healthy practices and sharing disease prevention messages.
- **Commitment and Resilience**: Pupils remain committed to practicing healthy habits such as hygiene, proper nutrition, and disease prevention.

Crosscutting issues

1. Gender education:

Ensure both boys and girls understand their role in disease prevention (e.g., hygiene, care roles). Use gender-inclusive language and examples. Encourage equal participation in discussions and group work.

2. Inclusive education:

Support learners with disabilities (e.g., use visuals for hearing-impaired students, sit visually impaired students close to the board). Adapt activities so all learners, regardless of ability, can participate in hygiene demonstrations or group discussions.

3. Environmental conservation:

Highlight the link between a clean environment and disease prevention (e.g., avoiding stagnant water to prevent malaria). Encourage proper waste disposal, latrine use, and safe water practices.

Assessment criteria: *i Assess their ability to identify and describe different types of diseases, explain their causes and prevention methods, and apply good health practices in daily life.*

Materials: *Charts and diagrams, Pictures or images, Soap, water, and hand sanitizers, Masks and gloves, internet, Cardboard or thick paper, Pens, crayons, or markers, Glue, Bottle caps or recyclable items, paper for pictures*

Topic area: Energy				
P5, SET	**Unit 13 :** Electricity			**Number of periods: 12**
Key unit competence: Explain how electricity is generated, identify its sources and circuit components, build simple circuits, and demonstrate safe use of electricity.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the importance and production of electricity. – Identify different sources of electricity. – List common tools and materials used in electricity work. – Identify components of electric circuit. – Explain the methods of controlling and danger of electric circuit.	– Construct a simple electric circuit. – Differentiate the components of electric circuit. – Manage and control an electric circuit safely.	– Show care and interest in producing electricity. – Take responsibility to keep themselves safe when using electricity. – Accept and adapt to new technology by using safe and standard electrical tools and equipment.	– **Importance of electricity.** – **Production of electricity.** • Sources of electricity (Bicycle dynamo, Solar panel, Hydroelectric plant, ...) – **Tools and materials used in electricity work.**	– Make a field trip of area where electricity is extensively used to produce various goods and discuss in group the importance of electricity. – Listen to a demonstration by an electrician on safe handling of electrical tools and circuits. – Make experiment on production of electricity using a simple dynamo. – Make experiment on production of electricity using a simple solar panel.

– Explain how to control electric circuits and the dangers they may cause. – Describe different sources of electricity (e.g., solar panel, dynamo, hydroelectric plant).	– Select proper conducting materials for electricity. – Demonstrate safety procedures while working with electricity.	– Justify change along with technological advancement to defend use of standard electrical component and other electronic equipment.	– Electrical tools – Common materials used to conduct electricity • Constructing and controlling simple electric circuit. • Dangers of electricity.	– In group work, collect materials (dry cells, bulb, wires, switches) and construct simple circuit. – In group, discuss on the various ways of controlling electric circuit. – In pairs, observe charts to mention the dangers of electricity. – Test various materials to identify conductors and insulators.

Links to other subjects: *Physics (energy transformation), Mathematics (measuring electrical value), Technical Drawing(drawing circuit), Entrepreneurship(phone charging), ICT(demonstration)*

Generic Competences

- **Critical Thinki**ng: Pupils analyze different sources of electricity and explain how electricity is produced and used.
- **Creativity and Innovatio**n: Pupils design and construct simple electric circuits using available materials.
- R**esearch and Problem Solvin**g: Pupils use information from experts and learning resources to improve their understanding of electricity.

Basic Values

- S**elf-Reliance**: Pupils develop confidence in constructing simple electric circuits and handling electrical materials safely.
- C**ommitment and Res**ilience: Pupils remain focused and patient while carrying out experiments and solving challenges related to electric circuits.
- D**ignity and Integri**ty: Pupils follow safety rules, use electrical tools responsibly, and respect instructions during practical activities.

Crosscutting issues

- **Environment and sustainability:**

Petrol and diesel generators pollute the air, while clean energy sources like solar, wind, and water are environmentally friendly.

- **Standardization culture:**

Using high-quality electrical appliances is important for safety and durability. Poor quality products can cause fires and are less reliable.

- **Gender education:**

Both girls and boys should actively participate in practical activities and be given equal opportunities in learning.

- **Inclusive education:**

Learners with disabilities should be supported, assigned duties they can handle, and their contributions appreciated to build self-esteem.

- **Peace and value education:**

Fair and equal distribution of electricity promotes peace, unity, and national development.

Assessment criteria: *Assess their ability to demonstrate understanding of the importance and sources of electricity, correctly use electrical tools and materials to construct and control simple circuits, apply safety measures, and show responsible and collaborative attitudes during activities.*

Materials: *Dry cells, wires, bulbs, electric meter, socket, tester, plugs,* b*attery,* s*crewdrivers, wire strippers, pliers, insulation tape, multimeter, switches,* i*nsulated gloves, bicycle with dynamo, solar lamp,*

Topic area: Materials and states of matter				
P5, SET	**Unit 14:** Materials and state of matter			**Number of periods: 14**
Key unit competence: Classify materials as metals or non-metals based on their properties, calculate their density, and demonstrate the changes of state of matter.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify common metals – Classify common metals based on their properties. – State the uses of metals – Name objects made from metals.	– Describe and recognize the properties of metals and use them safely. – Maintain metals and apply knowledge to calculate density and relative density. – Predict and investigate how heating or cooling changes water's state and temperature.	– Develop a positive attitude toward using and caring for different metals. – Show curiosity about matter in the environment and ask questions. – Care for water as a limited and valuable natural resource and practice saving it.	– **Classification of materials** • Non metals • Metals – **Physical properties of metals** – **Uses of common metals** – **Maintenance of metals** • Painting the metal	– In group, collect variety of objects: bells, a nail, piece of iron sheet, brick, plastic pens, hoe, and saucepan and group them according to their properties. – Make a field visit in school surroundings to observe uses and maintenance of metals. – Investigation on physical change of cooled water vapours.

– Explain how to calculate the density and relative density of objects. – Justify the use of relative density in daily life. – Define matter and identify its states – Name the states of water (ice, water, steam) and explain how water changes from one state to another. – Explain how evaporation and condensation support the water cycle.	– Identify and explain water state changes in the water cycle. – Justify the applications of relative density in daily life		• Galvanization • Store in a dry place • Oiling – **Density and relative density** • Relative density and its applications – **Matter and its states** – **Properties of the three states of matter** • Solids, liquids and gases – **Change of state in water** – **Changes in states of water in the water cycle** – **Transformation of states of matter**	– Make an experiment to investigate conduction of heat in metals using heat source, nail, metal and candle or wax. – In group, carry out practical activity to investigate the density of different objects. – In group, organize a game **"Which One Sinks?"** and drop an object into water and compare different values of densities of measured objects with the density of water. – In groups, measure the density and relative densities of different liquid materials. – Practical activity to investigate physical change on heated ice.

– Differentiate density of regular objects from irregular objects.				– Make investigation on changes between the three states of iodine/ice/ naphthalene. – Conduct a hands-on activity to test malleability and ductility of different metals. – Organize a poster or chart activity showing proper maintenance methods for metals. – In pairs, illustrate poor and good conductors of heat
Links to other subjects: *Physics, mathematics: calculation of density*				
Generic Competences • **Critical Thinki**ng: Pupils compare and classify materials based on their properties such as being metals or non-metals. • **Creativity and Inno**vation: Pupils design posters and charts showing uses and proper maintenance of metals. • R**esearch and Problem** Solving: Pupils apply knowledge of density to solve practical problems involving objects and liquids.				

Basic Values

- **Self-Reliance**: Pupils develop confidence in conducting experiments, measuring density, and investigating properties of materials independently.
- **Respect for Others and Human Rights**: Pupils cooperate with others while sharing materials and conducting practical activities safely.
- **Commitment and Resilience:** Pupils remain patient and focused when performing experiments and solving calculations related to density.

Crosscutting issues

- **Financial education:**

Learners should be taught to take good care of materials, as they are costly and often a source of income for many people.

- **Inclusive education:**

All learners, including those with disabilities, should be fully involved in group activities.

- **Environment and sustainability:**

Learners should understand that waste materials can harm the environment, so proper disposal of worn-out or unused items is important to prevent pollution.

Assessment criteria: *Assess their ability to Classify materials as metals or non-metals based on their properties, calculate their density, and demonstrate the changes of state of matter.*

Materials: *Magnets, paper, bells, nails, plastics, brick, piece of iron sheet, hoes, plastics,* weighing balance, *wood, Stone, Metallic harmer, densimeter, clean water, unclean water, cooking oil, paraffin, juice, milk, salt water, cooking oil, hydrometer, beaker.*

6.4.Science and Elementary Technology of Primary Six (P6)

6.4.1.General competences

At the end of P6, the following key competences would be achieved:

- Use mechanics tools correctly, take care of them, and act safely and responsibly when working with tools.
- Identify, use, and care for simple machines in a safe and responsible way and understand how they help make work easier.
- Identify causes and dangers of air pollution, take action to reduce it, and show care for clean and healthy air in the environment.
- Explain how to care for cows and goats properly and show good habits in keeping animals that help families and communities.
- Manipulate documents using a Word Processing program, perform mathematical calculations using a Spreadsheet program and format a spreadsheet document.
- Explore, apply, and reflect on the use of emerging technologies to solve real-life problems and improve everyday activities.
- Use Scratch to design shapes, do calculations, and create simple animations with sprites and backgrounds.
- Identify and explain how plants reproduce, recognize different types of plant reproduction, and show interest in caring for plants around them.
- Understand different types of waste, use ways to manage waste safely, and show care for the environment by handling waste properly.
- Identify parts of the circulatory system, describe how it works, and develop healthy habits to keep it

working well.

- Explain how the respiratory system works, describe and care for it, and practice healthy habits to keep it working well.
- Identify the parts and functions of the human reproductive system, explain hygiene practices, puberty changes, and responsible behaviors, and show positive attitudes toward prevention of diseases and respect for people living with STIs and HIV.
- Identify different forms and sources of energy, show how energy changes from one form to another, use energy wisely, and care about using clean energy to protect the environment.
- Explain how magnets work, identify different types and use of magnets, make a temporary magnet, and show interest in exploring magnets in daily life.

6.4.2.Table units for Primary 6

Topic area: Tools and objects production		
P6, SET	**Unit 1:** Mechanics tools	**Number of periods: 6**
Key unit competence: Identify and use mechanics tools correctly, take care of them, and act safely and responsibly when working with tools.		

Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify common mechanics tools. – Explain the use of mechanics tools. – State the dangers of using tools in the wrong way.	– Use mechanics tools safely and correctly. – Clean and store tools properly after use. – Follow safety rules when handling tools. – Take responsibility for their own safety and the safety of others.	– Show care and respect for mechanics tools. – Develop interest in using tools to make and fix things. – Use tools safely and respectfully to protect themselves, others, and the environment.	– **The common Mechanics tools** – **Uses and maintenance of mechanics tools** • Uses of mechanics tools • Maintenance of mechanics tools. – **Dangers of the misuse of mechanics tools.**	– Observe the displayed range of mechanics tools, name them and match them with their use. – Visit a nearby garage to gain experience on how to use mechanics tools. – Practical work about the use and care for mechanics tools. – In group, discuss and make presentation on maintenance of mechanics tools.

– Describe ways to stay safe and avoid accidents when using mechanics tools.			– **Precautions to take when using mechanics tools**	– Tool safety Role-Play: Groups act out correct and incorrect tool use, then discuss dangers and precautions. – Safety checklist: Learners create and use a checklist of safety steps for tool handling.

Links to other subjects: Home science

Generic competences:

- ***Critical thinking:*** Developed through identifying appropriate mechanics tools for different tasks, analyzing the dangers of their misuse, and selecting suitable safety precautions.
- ***Research and problem solving:*** Developed through observing mechanics tools, visiting a garage, investigating their uses and maintenance, and applying safety measures during practical work.
- ***Co-operation, interpersonal relations and life skills:*** Developed through group discussions, role-plays, practical activities, and collaborative preparation of safety checklists.

Basic values:

- ***Dignity and integrity:*** Developed through handling mechanics tools responsibly, following safety rules, and maintaining tools properly after use.
- ***Hard work:*** Developed through active participation in practical activities, proper maintenance of tools, and careful completion of assigned tasks.
- ***Commitment and resilience:*** Developed through practicing correct tool-handling techniques, learning from mistakes, and consistently applying safety procedures.

Cross-cutting issues

1. ***Environment and sustainability:*** The oils and other chemicals that come from machines when not well disposed cause pollution. By causing pollution our environment gets spoilt. This may bring problems.
   - Caution the pupils against disposing of these wastes anyhow.
2. ***Gender education:*** Highlight that Rwanda promotes equal opportunities for men and women in science, technology, engineering, and mathematics (STEM) fields and Technical education (eg.TVT, TSS). Emphasize to pupils that both men as well as women can earn an income by becoming a mechanic.
3. ***Peace and values education:*** Inform the pupils that to be successful in mechanics job, it requires to be honesty and trustful, cooperative and having teamwork spirit, to easily and effectively solve the conflict, to respect each other , to be responsible and disciplined and gender inclusive.

   Advise pupils not to use mechanics tools as weapons to hurt others, people should live in peace and harmony in order to develop. Inform them that they should be willing all the time to accommodate views of others. In a case, a child gets hurt accidentally others should provide first aid before taking him or her to the hospital.
4. ***Financial education:*** Let the pupils understand that well maintained tools last for long thereby reducing maintenance and replacement costs. Stress the fact being a mechanics can help them to earn money and live better. Tell them how to manage their income, grow their businesses, and make savings.
5. ***Standardization culture***: Encourage pupils to use branded or certified tools that meet international or national standards for their durability and performance.
6. ***Inclusive learnin***g: During practical activities, allow all pupils to participate equally irrespective of their gender, physical disability or mental challenges. During pairing, bright pupils should be mixed with slow pupils.

Assessment criteria: *Assess pupils' ability to use mechanics tools correctly, take care of them, and act safely and responsibly when working with tools.*

Materials: Hammer, screwdriver, open-ended spanner, pliers, hand drill, bench vice, cutting metals, making halls into wood or metals, hacksaw, etc.

Topic Area: Tools and objects				
P6, SET	**Unit 2:** Simple machines			**Number of periods: 6**
Key unit competence: Identify, use, and care for simple machines safely, and explain how they make work easier.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define what simple machines are. – Identify different types of simple machines – Distinguish between simple machines and other tools. – Explain how each type of simple machine works.	– Group simple machines based on their classes. – Draw and label different types of simple machines. – Build simple models or patterns of levers and other machines. – Use simple machines carefully and correctly.	– Show interest in using simple machines. – Be aware of health and safety measures when working with simple machines. – Appreciate how simple machines make work easier at home, school, and in the community. – Use correct words when talking	– **Definition of simple machine and the difference between simple machines and other tools** – **Types of simple machines** • Levers • Wheel and axle • Pulleys • Inclined plane • Wedges • Screw – **Dangers and safety in using simple machines**	– Brainstorm the meaning of simple machine. – Observe and discuss different types and characteristics of levels. – Design a device to help move a heavy object(tree) out of the school garden. – Collect and use simple machines according to classes to discover the position of fulcrum, load and effort.

– Describe common dangers associated with using simple machines. – Explain safety measures when using simple machines.	– about simple machines. – Demonstrate how simple machines work through hands-on activities.	– Demonstrate care and responsibility when handling classroom models or tools. – Collaborate respectfully in group activities and experiments. – Value the role of simple machines in daily life and work settings.	• Dangers • Safety	– In pairs, observe real or model tools to discuss which one are simple machines (e.g. scissors, screwdrivers, ramps). – Provide a scenario that talk about the safe and unsafe use of machines. – Discuss the wrong and right use of machines. – Station rotation to explore all six types of simple machines. – Sorting game to distinguish simple machines from other tools.

Links to other subjects: Physics

Generic competences:

- ***Critical thinking:*** Developed through distinguishing simple machines from other tools, classifying them into different types, and explaining how each type makes work easier.
- ***Research and problem solving:*** Developed through observing, exploring, and building simple models of machines, investigating how they work, and applying them to solve everyday problems.
- ***Co-operation, interpersonal relations and life skills:*** Developed through group discussions, station rotation activities, sorting games, and collaborative practical work involving simple machines.

Basic values:

- ***Dignity and integrity:*** Developed through using simple machines responsibly, following safety procedures, and taking proper care of tools and classroom models.

- ***Hard work:*** Developed through active participation in practical investigations, model construction, and correct use of simple machines to accomplish tasks.
- ***Commitment and resilience:*** Developed through repeated practice in using different simple machines safely, learning from mistakes, and improving practical skills.

Cross-cutting issues

1. ***Environment, climate change and sustainability:*** Most of the simple machines can be made by cutting down trees; pupils should be cautioned not to practice deforestation. Used oils and other chemicals from simple machines when not disposed of well, cause environmental pollution. Caution the pupils against disposing of wastes and their management.
2. ***Gender education:*** Inform pupils that both men as well as women can earn a living by making and using simple machines.
3. ***Peace and values education:*** Make pupils aware that simple machines should not be used to hurt others. People should live in peace and harmony in order to develop. Inform them that they should be willing all the time to accommodate views of others. In case a child gets hurt accidentally others should provide first aid before taking him or her to the hospital.
4. ***Financial education:*** When we make and use our local simple machines, our work becomes easy and cheap. Encourage pupils to develop a habit of making their own simple machines where possible.
- Let the pupils understand that, well maintained tools last for long hence reduces costs of replacement. Also, let pupils know that when they grow up, they can earn a living from making and fabricating simple machines.

5. ***Standardization culture:*** Warn pupils against using counterfeit materials as this may lead to frequent breakdowns which end up being very costly. Also encourage pupils to always buy and use original products/ tools.
6. ***Inclusive learning:*** Allow all pupils to participate during activities irrespective of their gender, physical disability or mental challenges. Also during pairing, bright pupils should be mixed with slow pupils.

Assessment criteria: *Assess pupils' ability to identify, use, and care for simple machines in a safe and responsible way, and understand how they help make work easier*

Materials: Axle, inclined planes, screws, pulleys, wedges, wheel and levers (crowbars, scissors, see-saws, wheel barrow, nutcracker, hoe, fishing load, spade, pair of tong, broom)

Topic area: Our Environment				
P6, SET	**Unit 3:** Air pollution			**Number of periods: 6**
Key unit competence: Identify the causes and effects of air pollution, take action to reduce it, and show care for clean air in the environment.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define pollution. – Identify common air pollutants in the environment. – Explain the causes and dangers of air pollution. – Identify signs of air pollution. – Explain the consequences of air pollution on human health and the environment.	– Practice ways to reduce air pollution in daily life. – Use safe habits to avoid breathing in dirty air. – Observe and analyze sources of air pollution in their local environment. – Compare and contrast different types of air pollutants and their impacts.	– Appreciate the value of clean and fresh air. – Act responsibly by avoiding activities that pollute the air. – Speak out and encourage others to stop polluting the air. – Appreciate the importance of clean air for health and the environment.	– **Definition of air pollution and common air pollutants** – **Sources of common air pollutants** • Sources of air pollution • Common air pollutants – **Consequences of polluted air** • Human health effects • Environmental effects	– Make a field visit nearby the school surroundings, (industries or order human activities) and discuss air pollutants and their sources. – In group, discuss the consequences of polluted air and on the way to protect against it. – Investigate what will happen if papers or other waste are burnt in a glass jar.

– Identify methods for protecting the air and controlling air pollution	– Communicate solutions and preventive measures effectively through presentations, posters, or group discussions	• Develop a sense of responsibility toward reducing pollution. • Show willingness to adopt and advocate for eco-friendly practices.	– **Protection of air against air pollutants**	– Make an experiment to polluted air contained in a plastic bag using dust or fumes, observe and discuss how to avoid air pollution. – Field Survey or Observation: Visit a busy road or industrial area and note sources of visible or inferred air pollution. – Case Study: Analyze a real-life scenario (e.g., a city experiencing smog) and identify health and environmental consequences.
Links to other subjects: *Social studies: air pollution*				
Generic competences: • ***Critical thinking:*** Developed through identifying sources, causes, and effects of air pollution, analyzing real-life situations, and proposing appropriate measures to reduce pollution. • ***Research and problem solving***: Developed through field observations, experiments, case studies, and investigating practical ways to prevent and control air pollution in the community. • ***Communication (Literacy and Numeracy):*** Developed through presenting findings, creating posters, participating in discussions, and communicating solutions to promote clean air.				

Basic values:

- ***Dignity and integrity***: Developed through taking personal responsibility for protecting air quality by avoiding activities that pollute the environment and encouraging responsible behavior.
- ***Patriotism:*** Developed through appreciating the importance of protecting Rwanda's environment and actively participating in keeping the country clean and healthy.
- ***Commitment and resilience:*** Developed through consistently adopting environmentally friendly practices and encouraging others to reduce air pollution despite challenges.

Cross-cutting issues

1. ***Gender education***: Both boys and girls should participate in conserving our environment. It is not a preserve of the boy or girl gender. Also, emphasize to pupils that anybody irrespective of their gender can pursue a carrier in environmental conservation. Give examples of role models who are successful in the area where the pupils come from.
2. ***Standardization culture***: Emphasize the need to use certified equipment and machines which do not pollute the environment. Caution pupils against using counterfeits which may lead to accidents or injury of users or frequent breakdowns
3. ***Inclusive education***: All pupils should be encouraged to participate during lessons and practicals. Special arrangement should be made to take care of pupils with special needs. For example, provide brail for blind pupils, large print text for those with sight problems and allocate physically challenged pupils to others to assist them during field trips and practical activities. Further, this category should be given tasks that they can manage during the practical sessions.
4. ***Financial education:*** Pupils should be made aware of the fact that a clean environment ensures healthy living devoid of diseases hence helps to reduce health related costs. Also, buying quality equipment will lead to saving money in the long run as they stay for long and costs on repairs are reduced.

5. Environment and sustainability education: This is a topic that directly affects the environment. Emphasize the need to reduce air pollution and other forms of pollution in general. Caution the pupils against activities that cause air pollution like cigarette smoking, bush burning among others. •***6. Peace and values education:*** People should learn to live in harmony and they should be ready to help other people, especially those who are affected by natural disasters like floods or landslides.
Assessment criteria: *Assess pupils' ability to identify causes and dangers of air pollution, take action to reduce it, and show care for clean and healthy air in the environment*
Materials: *Charts, environment, industries*

Topic area: Our Environment				
P6, SET	**Unit 4:** Cows and goats management			**Number of periods: 12**
Key unit competence: Explain how to keep and care for cows and goats properly and show good habits towards animals living in homes and communities.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Name different types of cows and goats and their uses. – State the characteristics of good cowshed or goat shelter. – Explain how to protect cows and goats from common diseases.	– Choose healthy cows and goats for keeping or breeding. – Use simple and correct words when talking about cows and goats. – Feed, clean, and look after the animals correctly.	– Show interest and care when working with cows and goats. – Appreciate how cows and goats give us milk, meat, and money. – Respect animals and treat them kindly.	– **Characteristics of a good cowshed or goat shelter** – **Types of cattle breeds** • Local (indigenous) cattle breeds • Foreign (exotic) cattle breeds – **Types of goat breeds** • Local (indigenous) goat breeds • Foreign (exotic) goat breeds – **Characteristics of cattle breeds to rear**	– Field visits of different cattle/goat farms, make observations and outline the characteristics of good cowshed/ goat shelter. – In group, discuss about the types of cattle/goat breeds. – Using pictures, charts, or live animals during a farm visit, identify and classify different local and exotic cattle and goat breeds, noting their distinguishing characteristics.

– Explain the importance of cattle and goat farming.			– **Characteristics of goat breeds to rear** – **Proper feeding of cows and goats** – **Cattle and goats' health sanitation conditions** – **Common diseases of cattle and goats** • Infectious diseases that affect cattle and goats. • Parasitic diseases that affect cattle and goats. – **Prevention and control measures of cattle and goat diseases** • Prevention measures • Control measures – **Importance of cattle or goat farming** • Nutritional benefits • Economic benefits • Social benefits • Agricultural benefits	– Make a field visit of model farmer, discuss good practice of feeding and hygiene for cattle/ goat. – Practical: Manage a small scale livestock project at school. – Conduct a research and discuss about cattle/ goat diseases and their prevention. – Conduct research and discuss the socio-economic importance of cow/goat breeding. – Debate if should a villager purchase a good or cow.

Links to other subjects: *Agriculture: Animal management*

Generic competences:

- ***Research and problem solving***: Developed through field visits, conducting research on cattle and goat breeds, diseases, feeding practices, and applying appropriate animal management techniques.
- ***Critical thinking:*** Developed through comparing local and exotic breeds, selecting suitable animals for rearing, and analyzing appropriate methods for disease prevention and proper livestock management.
- ***Co-operation, interpersonal relations and life skills:*** Developed through group discussions, collaborative farm activities, and participation in school livestock projects while sharing responsibilities and ideas.

Basic values:

- ***Hard work:*** Developed through active participation in feeding, cleaning, and caring for livestock, recognizing that successful animal farming requires commitment and diligence.
- ***Dignity and integrity:*** Developed through treating animals humanely, maintaining proper hygiene, and carrying out livestock management activities responsibly.
- ***Patriotism:*** Developed through appreciating the contribution of livestock farming to food security, household income, and Rwanda's socio-economic development.

Cross-cutting issues

1. ***Environment, climate change and sustainability:*** As farming or keeping of animals is being started, there are a lot of trees cut down to construct the animal houses or sheds. While cutting down trees and clearing the farm area we should be conscious not to destroy the environment. In fact, we should plant two trees for every one tree cut down.
2. ***Gender education: I***nform pupils that both men as well as women can earn a living by becoming professional farmers or practicing commercial farming. Farming is NOT a preserve of one gender!
3. ***Peace and values education***: Caution pupils against using farm tools as weapons to hurt others. Stress the fact that people should live in peace and harmony in order to develop. Inform them that they should

- be willing all the time to accommodate views of others. Also, in case a child gets hurt accidentally others should provide first aid before taking him or her to the hospital. Also, inform them that as they share animals according to the government policy it should be peacefully and harmoniously done.

4. ***Financial education:*** Let the pupils understand that farming or keeping of farm animals is highly beneficial to the people and government of Rwanda. They can comfortably ache a living from farming in future therefore they should not look at it in a negative way.
5. ***Standardization culture:*** Encourage pupils to learn about new innovations in modern farming. They should migrate from traditional farming to modern farming methods. Also, caution them against using counterfeit materials and feeds when doing farming.
6. ***Inclusive learning:*** Allow all pupils to participate during class/group activities irrespective of their gender, physical disability or mental challenges. Also, during pairing, bright pupils should be mixed with disadvantaged pupils.

Assessment criteria: *Assess pupils' ability to explain how to care for cows and goats properly and show good habits in keeping animals that help families and communities.*

Materials: *Cows / goats, cattle/goat houses, pictures/drawings, pots, water ...*

Topic area: ICT				
P6, SET	**Unit 5:** Word Processing and Spreadsheet			**Number of periods: 12**
Key unit competence: Manipulate documents using a Word Processing program and perform mathematical calculations using a Spreadsheet program and format a spreadsheet document.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Describe how to open, save and close Word Processing and Spreadsheet. – Recognize the formatting tools in AbiWord or Word and use them. – Explain how to insert, rename, delete	– Open, edit and save documents in AbiWord (or Ms Word) and Spreadsheets. – Format text using bold, italics, underline and change font properties for better text readability. – Organize spreadsheet data by adjusting	– Appreciate the usefulness and aesthetics of text and spreadsheet formatting. – Show interest in applying technology to organize and present data clearly. – Value the purpose of spreadsheets for calculations, budgeting, or managing student information.	**Word processing** – **Making text bold, italic and underlined** • Bolding, making italic and underlining in Word processing (or bolding, making italic and underlining in Abiword) – **Changing font type, font size and font color**	– Practice the use of bold, italic, underline and apply different fonts to text. – Practicing saving and opening a file in/from different locations. – Group activity: Create a front page of a school newsletter. Using all the functions of Word (or Abiword) to improve its presentation. – Exercise to explore basic features of a spreadsheet environment.

worksheets and modify columns and rows. – Describe basic arithmetic operations and functions applied in spreadsheet programs. – Identify the elements of a workbook environment and their uses.	– column widths, row heights, borders and alignment. – Insert, delete and rename worksheets in a workbook. – Create, rename and delete, a worksheet – Create and save a worksheet in a workbook. – Organize and manage entering data in a cell – Organize and use various methods to move, delete and fill data from/into cells – Manipulate a worksheet and manage columns and rows	– Show concern for keeping files in the correct folders – Appreciate text formatting using different colours – Be interested to explore more more features of the Spreadsheet environment – Pay attention to the characteristics and use of sheets and cells.	• For Microsoft Word (or for Abiword) **Spreadsheet** – **Opening and saving a workbook** • Opening a workbook • Saving a workbook – **Working with worksheets** • Insert, rename and delete a worksheet • Modifying columns, rows and cells • Inserting and deleting rows and columns – **Formatting a cell** • Changing font type or font size in a worksheet	– Individual exercises to insert data into cells and apply indicated manipulation. – Practice and apply arithmetical operations on numerical data. – Activity: Individually create spreadsheet to show your homes weekly shopping. Indicate on the spread sheet what has been purchased, how much it cost and how much was bought for each item. – Project: Create a report card in Word Processing (or in Spreadsheet) on which there are all the P6 subjects. Brainstorm how that reportcard can facilitate work at your school

	– -Use basics arithmetic operations to manipulate cells data – Apply formulas and functions to perform calculations in spreadsheets.		• Adding or removing cell borders • Fill color and font color • Text alignment – **Mathematical operations** • Applying a formula in one cell • Applying a formula in many cells	
Links to other subjects: *English (writing an article or report) Mathematics (basic number operations and formulae)*				
Generic competences: • ***Critical thinking:*** Developed through selecting appropriate formatting tools, organizing data in spreadsheets, applying formulas and functions, and managing files and folders effectively. • ***Research and problem solving:*** Developed through creating and organizing digital documents, solving practical data management tasks, and applying spreadsheet functions to perform calculations and present information accurately. • ***Communication (Literacy and Numeracy):*** Developed through producing well-formatted documents, presenting information clearly using word processing tools, and organizing numerical data in spreadsheets using appropriate formulas and tables.				

Basic values:

- ***Dignity and integrity:*** Developed through responsible use of computers, careful management of digital files, and respect for ICT equipment and digital information.
- ***Self-reliance:*** Developed through independently creating, editing, formatting, saving, and retrieving documents and spreadsheets to accomplish assigned tasks.
- ***Commitment and resilience:*** Developed through practicing ICT skills repeatedly, correcting errors, and improving the quality and accuracy of digital documents and spreadsheet work.

Cross-cutting issues

1. ***Critical thinking:*** Tell pupils that will writing they have to think deeply and make sure that what they write will be understood by the reader.
2. ***Peace and values education***: Encourage pupils to write texts that promote peace and positive values. Help them understand the importance of avoiding provocative messages and offensive language, and encourage them to communicate respectfully and responsibly.

Assessment criteria: *Assess pupils' ability to manipulate documents using a Word Processing program and perform mathematical calculations using a Spreadsheet program and format a spreadsheet document.*

Materials: *XO Laptops shopping lists, Computer desktop, Computer laptop*

Topic area: ICT				
P6, SET	**Unit 6:** Introduction to Emerging Technologies			**Number of periods: 6**
Key unit competence: Explore, apply, and reflect on the use of emerging technologies to solve real-life problems and improve everyday activities				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify common emerging technologies used in daily life at home, school, and in the community. – Identify problems in the community and the emerging technology that can help in addressing them.	– Match emerging technologies with their real-life applications – Analyze simple scenarios and suggest appropriate emerging technologies to solve the problems.	– Show curiosity and interest in exploring new technologies. – Value the positive impact of new technologies on education, health, safety, and communication. – Appreciate the role of technology in improving quality of life.	– **Use of emerging technology in our lives** • Characteristics of emerging technologies • Areas where new technologies are used – **Types of Emerging Technologies** • Robotics • Artificial Intelligence (AI)	– In small groups students list all the ways they use technology in daily life. – Assign groups to research how emerging technologies are used in **Education**, **Health**, **Factories**, and **Transportation**, then teach their peers. – Group Activity: Use simple demos (e.g., Google Cardboard for VR, AR-enabled app, chatbot for AI).

– Explain how robotics are used to improve daily life. – Describe the application of emerging technologies such as robotics, AI, Augmented Reality, Virtual Reality, Drones and IoT. – Explain the characteristics of emerging technologies vis a vis change over time. – Describe how emerging technologies can improve services.	– Explain how emerging technologies could be used to solve the current problems in their community.	– Appreciate the role of drones in improving health care in Rwanda. – Appreciate the use of robotics in helping humans do different tasks. – Develop ethical awareness of the use and implications of technology. – Value the responsible use of technology for sustainable development.	• Drones • Internet of Things (IoT) • Virtual Reality (VR) • Augmented Reality (AR) – **The importance of Emerging Technologies** • Education • Health • Factories • Transportation	– Group Activity: Students make a comparison of two types of technologies (e.g., VR vs. AR). – In group: Students imagine a new tech solution for a problem in education, health, transportation, or manufacturing. Present their ideas

Links to other subjects: *English, Social Studies*

Generic competences:

- ***Critical thinking:*** Developed through analyzing community problems, comparing different emerging technologies, and selecting appropriate technologies to solve real-life challenges.
- ***Research and problem solving:*** Developed through researching applications of emerging technologies, exploring their uses in different sectors, and proposing innovative technological solutions to community needs.
- ***Communication (Literacy and Numeracy):*** Developed through group discussions, presentations, demonstrations, and explaining how emerging technologies improve services in education, health, transportation, and other sectors.
- ***Creativity and innovation:*** Developed through designing and presenting original technology-based solutions to everyday problems and imagining new ways technology can improve people's lives.

Basic values:

- ***Self-reliance:*** Developed through encouraging learners to explore and use technology independently to solve problems and improve everyday activities.
- ***Commitment and resilience:*** Developed through adapting to technological changes, continuously learning about new technologies, and embracing innovation responsibly.
- ***Patriotism:*** Developed through appreciating how emerging technologies, such as drones and Artificial Intelligence, contribute to Rwanda's development in areas such as healthcare, education, agriculture, and public services.

Cross-cutting issues

1. **Environmental Sustainability:** Discuss how technologies like AI can help in protecting the environment by predicting the weather and taking measures in advance. Here emphasize that it is good to protect the environment and more by using new technologies.
2. ***Inclusive education:*** Make pupils know that there are technologies that support people with disabilities, such as AI-powered speech recognition for individuals with speech impairments or wearable devices enhancing mobility.
3. ***Financial education:*** Make learners understand the economic benefits of using emerging technologies whereby a task that would be done by humans and require too much financial means can be done using technologies like robots and therefore reduce the cost. They should therefore embrace these technologies.

Assessment criteria: *Assess pupils' ability to explore, apply, and reflect on the use of emerging technologies to solve real-life problems and improve everyday activities*

Materials: *Computers with internet connection, charts to illustrate immerging technologies.*

Topic area: ICT				
P6, SET	**Unit 7:** Programming for children			**Number of periods: 14**
Key unit competence: Use Scratch to design shapes, do calculations, and create simple animations with sprites and backgrounds				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify turtle art instruction to draw cylinder, cube, cuboids. – Summarize a given story using animations. – State how to compute the sum, difference, product, quotient or average in Scratch.	– Construct different geometric shapes using turtle art instruction or Scratch. – Perform different calculations in Scratch. – Summarize a given story using animations.	– Express the desire to draw more colourful drawings using turtle art commands – Show creativity in designing and creating more projects reflecting the real life experience	– **Drawing shapes with Turtle blocks** • Drawing polygon • Drawing equilateral and right-angled triangles • Drawing 3D shapes in Turtle Block – **Using Scratch in Mathematical operations** • The Basic Operators in Scratch – **Drawing shapes in Scratch**	– Identifying the different shapes, brainstorming on which turns the turtle will make in order to draw them and drawing those shapes. – Review how mathematical operations are done, brainstorm on how they can be done in Scratch and carry out different mathematical operations in Scratch.

– Draw shapes in Scratch. – Make game with a variable and stories in Scratch.	– Use variables in Scratch projects and make a game.	– Appreciate the way of expressing the ideas through projects, animations – Be proud to arrange commands and produce animations	• Drawing shapes with Scratch pen blocks • Understanding angles and turns • Drawing a square • Drawing an equilateral triangle – **Using variables in Scratch** • Making a variable in Scratch • Using variables in a Gam – **Making interactive stories in Scratch** – **Creating a simple game in Scratch** • Steps for making a game • Example of a catching game	– In groups brainstorm the properties of different shapes and draw them using Scratch. – In groups, invent an interactive story and make it in Scratch. – In groups, choose a game idea and implement it in Scratch by including a score counter.
Links to other subjects: *Mathematics (geometric shapes) English (creative writing), Art*				
Generic competences: • ***Creativity and innovation:*** Developed through designing animations, games, interactive stories, and drawings using Scratch and Turtle Art to express ideas and solve simple problems creatively. • ***Critical Thinking:*** Developed through arranging programming blocks logically, debugging simple programs, drawing geometric shapes, and applying mathematical operations using Scratch. • ***Research and Problem Solving:*** Developed through exploring programming features, experimenting with different commands, and creating projects that address real-life situations and learning tasks.				

Basic values:

- ***Self-reliance:*** Developed through independently creating, saving, editing, and improving programming projects using Scratch and Turtle Art.
- ***Commitment and resilience***: Developed through practicing programming skills, correcting errors (debugging), and improving projects through continuous testing and refinement.
- ***Hard work:*** Developed through active participation in programming activities, completing creative projects, and applying effort to produce quality animations, games, and drawings.

Cross-cutting issues

1. ***Gender education:*** Encourage both boys and girls to participate in programming tasks equally. Explain that programming is for both girls and boys
2. ***Environmental Education:*** Discuss how 3D shapes (like cubes/cylinders) are used in packaging, and reflect on how packaging affects waste and recycling.
3. ***Financial education:*** Discuss how using computerized systems help in reducing the cost of doing tasks. For manual systems where workers use papers, the tasks become more difficult and takes a lot of time.

Assessment criteria: *Assess pupils' ability to accurately design and construct geometric shapes using Turtle Art Activity and design different projects in scratch.*

Materials: *XO Laptop*

Topic area: Our Environment				
P6, SET	**Unit 8:** Plants reproduction			**Number of periods: 8**
Key unit competence:Identify and explain plant reproduction, recognize its different types, and demonstrate care for plants.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Name the parts of a flower for plant reproduction. – Explain how flowering plants reproduce sexually. – Describe how plants reproduce asexually.	– Draw and label the parts of a flower. – Observe and classify plants based on whether they reproduce sexually or asexuallyDifferentiate sexual reproduction and asexual reproduction	– Take interest in growing plants at home and at school. – Value both individual and group work in protecting plants and nature.	– **Parts of a complete flower** • External non-reproductive parts of the flower • Male reproductive parts • Female reproductive parts – **Types of plant reproduction** – **Sexual reproduction in flowering plants**	– In group, collect different samples of flowers in the school surroundings, dissect a complete flower and observe and name its parts. – In small groups, discuss the various ways in which plants reproduce (sexual and asexual) and present findings. – Create a seed and make it travel to invistigate how the shape and size of a seed affect how far it can travel.

– Explain the importance of plants reproduction.			• Pollination • Fertilization • Seed dispersal • Germination – **Asexual reproduction in plants** • Use of cuttings • Grafting • Layering • Suckers – **Importance of plant reproduction**	– Practical activity to perform the multiplication of some plants using asexual reproduction techniques: Cassava & Sweet potatoes (Stem cutting) and avocado (Grafting) – Conduct research using library books/search engines, make a group discussion of reasons of plant reproduction. – Draw and label the dissected flower parts observed during practical work, and compare results among groups. – Use real plant samples, pictures, or videos to observe and compare different modes of sexual reproduction (pollination, fertilization, seed dispersal, germination) and record observations.

				– Demonstrate or observe layering and sucker propagation in plants, either in the school garden or through visual aids. – Collect and classify seeds or fruits according to their dispersal method and explain the mechanism in groups.

Links to other subjects: *Agriculture, Biology*

Generic competences:

- ***Critical thinking***: Developed through comparing sexual and asexual reproduction, classifying different methods of plant reproduction, and explaining their importance in plant growth and survival.
- ***Research and problem solving:*** Developed through observing flowers, conducting practical activities on plant propagation, carrying out research, and investigating different methods of plant reproduction.
- ***Co-operation, interpersonal relations and life skills***: Developed through group discussions, practical investigations, flower dissection, and collaborative planting and propagation activities.

Basic values:

- ***Hard work***: Developed through active participation in practical activities such as flower dissection, grafting, layering, and stem cutting, while caring for plants.
- ***Dignity and integrity:*** Developed through handling plants and practical materials responsibly and showing commitment to protecting and caring for living organisms.
- ***Commitment and resilience***: Developed through practicing different plant propagation techniques patiently, learning from observations, and improving practical skills in plant production.

Cross-cutting issues:

1. ***Financial education***: Bring to the attention of pupils the fact that they should practice crop production so that they improve food security in the country.
2. ***Environmental conservation and sustainability:*** Caution pupils on the practice of picking up flowers from plants everywhere. This will make them interfere with plant reproduction
3. ***Gender education***: Let pupils know that people of all gender can take care of plants and pursue a career in plant management.

4. ***Inclusive education:*** All pupils should be encouraged to participate during lessons and practical. Special arrangement should be made to take care of pupils with special needs. For example, provide brail for blind pupils, large print text for those with sight problems and allocate physically challenged pupils to others to assist them during field trips and practical activities. Further, this category should be given tasks that they can manage during the practical sessions.

Assessment criteria: *Assess pupils' ability to description of the parts of a flower and explain the process of sexual and asexual reproduction in plants.*

Materials: *various plant, razor blade, flowers, cassava stem, sweet potatoes stem, transparent sacs and knives*

Topic area: Our Environment				
P6, SET	**Unit 9:** Sustainable waste management			**Number of periods: 8**
Key unit competence: Explain and sort different types of waste, use ways to manage waste safely, and show care for the environment by handling waste properly.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– State the difference between biodegradable and non-biodegradable waste. – Name different sources of waste (like homes, schools, markets). – Explain common methods of managing waste safely.	– Observe and distinguish between biodegradable and non-biodegradable waste in their surroundings. Investigate different ways people manage waste in their community.	– Be careful about dangerous waste like inflammable, toxic, or corrosive materials. – Show responsibility by separating hazardous, organic, and recyclable waste.	– **Classification of wastes** • Classification according to decomposition • Classification according to their harmfulness – **Sources of wastes** • Municipal, Medical, and Agricultural wastes	– Make a field visit in school surroundings to discover hazardous, organic and recyclable materials and classify them. – In group work, identify the different sources of wastes and present the findings. – Practical activity to collect garbage around the school, discuss and apply the proper garbage collection techniques. – Make a model project of manure production as waste management techniques or make a

	– Practice basic waste management methods like sorting and safe disposal.	– Care about keeping the environment clean and safe.	• Automobiles and construction wastes • Electronics and industrial wastes – **Waste management techniques**	useful object from waste. – Create a classification chart or poster for wastes collected during the field visit, showing both decomposition and harmfulness categories. – Use pictures, videos, or real examples to identify less visible waste sources like electronic, medical, and industrial waste, then discuss their impacts. – Demonstrate or discuss a variety of waste management techniques such as composting, recycling, reusing, and safe disposal of hazardous waste. – Role-play or demonstrate safe handling and protective measures for hazardous waste.

Links to other subjects: *Agriculture, social studies, chemistry*

Generic competences:

- ***Critical thinking:*** Developed through classifying waste according to its decomposition and harmfulness, analyzing sources of waste, and selecting appropriate waste management methods.
- ***Research and problem solving:*** Developed through field observations, investigating waste management practices in the community, and proposing practical solutions such as composting, recycling, and safe disposal.
- ***Co-operation, interpersonal relations and life skills:*** Developed through group discussions, waste collection activities, preparation of waste classification charts, and collaborative environmental conservation projects.

Basic values:

- ***Dignity and integrity:*** Developed through handling waste responsibly, following safety procedures, and maintaining cleanliness in the school and community.
- ***Hard work:*** Developed through active participation in waste collection, sorting, compost preparation, and environmental cleaning activities.
- ***Patriotism***: Developed through appreciating the importance of keeping Rwanda clean and contributing to environmental protection through proper waste management practices.

Cross-cutting issues

1. ***Standardization culture:*** Emphasize the need to use certified equipment and machines which do not pollute the environment when dealing with wastes. Caution pupils against using counterfeits which may lead to accidents or injury of users or frequent breakdowns.
2. ***Inclusive learning:*** All pupils should be encouraged to participate during lessons and practical. Special arrangement should be made to take care of pupils with special needs. For example, provide brail for blind pupils, large print text for those with sight problems and allocate physically challenged pupils to others to assist them during field trips and practical activities. Further, this category should be given tasks that they can manage during the practical sessions.

3. ***Financial education:*** Pupils should be made aware of the fact that a clean environment ensures healthy living devoid of related costs. Also, buying quality equipment will lead to saving money in the long run as they stay for long and costs on repairs are reduced.
4. ***Environment, climate change and sustainability:*** This is a topic that directly affects the environment. Emphasize the need to reduce wastes in our environment and other forms of pollution in general. Caution pupils against activities that may cause environmental pollution in general.
5. ***Peace and values education:*** People should learn to live in harmony and they should be ready to help other people, especially those who are affected by natural disasters like floods or landslides.
6. ***Gender education:*** Both boys and girls should participate in conserving our environment. It is not a preserve of the boy or girl gender. Also, emphasize to pupils that anybody irrespective of their gender can pursue a carrier in environmental health. Give examples of role models who are successful in the area where the pupils come from.

Assessment criteria: *Assess pupils' ability to explain different types of waste, use ways to manage waste safely, and show care for the environment by handling waste properly.*

Materials: *waste of all types (liquids/solids and/or hazardous /organic / recyclable waste materials)*

Topic Area: The human body				
P6, SET	**Unit 10:** Human circulatory system			**Number of periods: 16**
Key unit competence: Identify the parts of the circulatory system, explain how it works, and demonstrate healthy habits to keep it functioning well				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Name what blood is made of. – Explain how to keep the circulatory system healthy. – Identify common diseases of the circulatory system.	– Draw and label the human circulatory system – Practice good hygiene to keep the circulatory system healthy.	– Show care for the hygiene of the circulatory system. – Be aware of diseases that affect the circulatory system. – Take responsibility to keep their circulatory system healthy.	– **Main function of human circulatory system** – **Organs of human circulatory system** • Heart, blood vessels – **Structure of the human heart** • Heart Chambers • Heart Valves • Septum – **Blood vessels** – **T**he process of human blood circulation	– In group, make a research from library books/search engine to discuss about the main function of the human circulatory system. – Observe the wall charts or other learning support to describe the parts of human circulatory system. – In group, observe a wall chart, draw and discuss the function of the heart – In group, research and discuss on hygiene of the human heart. – Role play: First aid in case of external hemorrhage.

		– Develop the habit of regularly checking blood pressure.	– Components of human blood – Caring for our bodies and health of our circulatory system – Common diseases of the circulatory system, symptoms, control and prevention – **Blo**od pressure measur**ement**	– Practical activity, Count and compare the human heart beating for different persons using *a* hand. – Detect heartbeat using stethoscope – Field trip *at a* nearest health center and get blood pressure tested, discuss and interpret the results. – In groups, create *a* model of the human heart and circulatory system using locally *available* or recycled materials, label the parts and explain their functions.
***Links to other subjects**: Biology: human circulatory system*				

Generic competences:

- ***Critical thinking:*** Developed through explaining the functions of the circulatory system, interpreting blood circulation processes, *analyzing* common circulatory diseases, *and* relating healthy habits to the proper functioning of the system.
- ***Research and problem solving:*** Developed through conducting research, investigating circulatory health, interpreting blood pressure measurements, *and* proposing ways to prevent circulatory diseases.
- ***Communication (Literacy and Numeracy):*** Developed through presenting research findings, explaining the functions of the circulatory system *and* its organs, interpreting blood pressure results, *and* communicating healthy lifestyle practices.

Basic values:

- ***Dignity and integrity:*** Developed through taking personal responsibility for maintaining good circulatory health by practicing hygiene, healthy eating, regular exercise, and routine health check-ups.
- ***Self-reliance:*** Developed through adopting healthy habits, monitoring personal health, and making informed decisions to prevent circulatory diseases.
- ***Commitment and resilience:*** Developed through consistently practicing healthy lifestyles, following preventive measures, and encouraging others to maintain good cardiovascular health.

Cross cutting issues

1. ***Standardization culture:*** Bring to the attention of pupils the need to seek medical healthcare in standard and quality hospitals whenever they have problems with their circulatory system.
2. ***Financial education:*** Emphasize the fact that pupils should practice good hygiene to avoid conditions and disease of the circulatory system in order to avoid spending money on treatment.
3. ***Gender education:*** Emphasize to pupils that anybody irrespective of their gender can pursue a carrier inmedicine. Give examples of role models who are successful cardiologists of specialist doctors in the area where the learners come from
4. ***Inclusive education:*** All pupils should be encouraged to participate during lessons and practical. Specialarrangement should be done to take care of learners with special needs. For example, provide braille for blind pupils, large print text for those with sight problems and allocate physically challenged pupils to others to assist them during field trips and practical activities. Further, this category should be given tasks that they can manage during the practical sessions.

Assessment criteria: *Assess pupils' ability to describe and explain the functioning of the circulatory system, its hygiene and maintenance*

Materials: *Wall charts, Stethoscope, circulatory system models, blood pressure meter*

Topic area: The human body				
P6, SET	**Unit 11:** Human respiratory system			**Number of periods: 8**
Key unit competence: Identify the parts of the respiratory system, explain how it works, and demonstrate healthy habits to keep it functioning well.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the main functions of the respiratory system. – Identify the parts of the human respiratory system. – Explain the process of breathing. – Explain how to keep the respiratory system healthy.	– Look at charts or models of the respiratory system and describe them. – Draw and label the parts of the respiratory system.	– Show care for the hygiene of their respiratory system. – Be aware of diseases that affect the respiratory system. – Develop the habit of regular health check-ups.	– Parts of the human respiratory system and their main functions – Mechanism of respiration (Breathing in and out) – Good health practices and behaviors for respiratory system – Diseases of respiratory system	– In group make a research from library books/search engine and discuss about the main function of respiratory system – Observation of wall charts or other learning support of the respiratory system, draw it in the exercise book and identify the main parts. – Practical activity using balloons to discuss the mechanism of breathing. – Role play: Perform an experiment to show the movement of the thorax and diaphragm during inspiration and expiration

– Identify common diseases of the respiratory system.	– Practice ways to take care of their respiratory system	– Encourage others to avoid smoking.	– **Suffocation** • Causes of suffocation • First aid for suffocation	– Group discussion research on various diseases of respiratory system. – Group discussion about suffocation (cause, prevention and first aid in case of suffocation) – Do experiment to show the effect of smoking: bottle experiment, cotton wool and cigarette. – In groups, create a model of the human respiratory system using locally available or recycled materials, label the parts and explain their functions. – Observe and compare air quality in different environments by collecting dust particles on sticky tape or paper, then discuss how pollution affects the respiratory system. – In group, read short case studies about respiratory diseases, identify the symptoms, causes, and prevention methods. – Invite a local health worker to talk about respiratory health and demonstrate first aid for suffocation and asthma attacks.

Links to other subjects: *Biology, respiratory system*

Generic competences:

- ***Critical thinking:*** Developed through identifying and explaining the functions of the respiratory system, interpreting the mechanism of breathing, analyzing causes and prevention of respiratory diseases, and relating healthy practices to the proper functioning of the respiratory system.
- ***Research and problem solving:*** Developed through conducting research on respiratory diseases, investigating the effects of smoking and air pollution, performing practical activities, and suggesting solutions for maintaining respiratory health.
- ***Communication (Literacy and Numeracy):*** Developed through presenting research findings, explaining the parts and functions of the respiratory system, discussing health practices, and sharing ideas during group activities and demonstrations.

Basic values:

- ***Dignity and integrity:*** Developed through taking personal responsibility for maintaining respiratory health by avoiding harmful practices such as smoking, observing hygiene, and promoting healthy behaviours.
- ***Self-reliance:*** Developed through making informed decisions about personal health, applying preventive measures against respiratory diseases, and practicing healthy habits to protect the respiratory system.
- ***Commitment and resilience:*** Developed through consistently practicing healthy behaviours, following safety measures during practical activities, and encouraging others to prevent respiratory problems.

Cross-cutting issues

1. ***Standardization culture:*** Bring to the attention of pupils the need to seek medical healthcare in standard and quality hospitals whenever they have problems with their respiratory system.
2. ***Financial education:*** Emphasize the fact that pupils should practice good hygiene to avoid conditions and disease of the respiratory system in order to avoid spending money on treatment.
3. ***Gender education:*** Emphasize to pupils that anybody irrespective of their gender can pursue a carrier in medicine. Give examples of role models who are successful chest specialists in the area where the learners come from.
4. ***Inclusive education:*** All pupils should be encouraged to participate during lessons and practical. Special arrangement should be made to take care of pupils with special needs. For example, provide brail for blind pupils, large print text for those with sight problems and allocate physically challenged pupils to others to assist them during field trips and practical activities. Further, this category should be given tasks that they can manage during the practical sessions.

Assessment criteria: *Assess pupils' ability to explain the mechanism of respiration and its maintenance*

Materials: *wall charts, human respiratory system models, transparent plastic bottle, cotton wool, cigarette, balloons*

Topic area: The human body				
P6, SET	**Unit 12:** Human reproductive system			**Number of periods: 16**
Key unit competence: Identify the parts and functions of the human reproductive system and demonstrate appropriate hygiene practices, prevention and responsible behaviors toward sexually transmitted infections and diseases.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the function of the human reproductive system. – Identify the male and female reproductive organs. – State the function of genital organs.	– Demonstrate proper hygiene practices for external genital organs. – Practice responsible behaviors in situations related to puberty and sexuality. – Demonstrate ways to support and care for someone living	– Show care for genital health to prevent diseases. – Respect people living with STIs or HIV without judging them. – Show personal responsibility to protect themselves from STIs and HIV.	– **Function of a human reproductive system** – **Major internal and external parts of the male reproductive organ and their functions** – **Major internal and external parts of the female reproductive system**	– In group make a research from library books/search engine and discuss about the main function of reproductive system. – Observing the wall chart, drawing and labelling the male and female reproductive systems. – In group observe the wall chart and discuss on function of major parts of the reproductive system.

– Explain how to keep genital organs clean and healthy. – Identify sexual changes at puberty and responsible sexual behavior. – Describe how to prevent unintended pregnancy. – Explain the social and health effects of early or unintended pregnancy and its effects. – Name common sexually transmitted infections (STIs) and how to prevent them.	with HIV/AIDS.	– Be aware of ways to reduce the risk of infection.	– **Hygiene of female and male genital organs** – **Sexual characteristics at puberty:** • Secondary sexual changes in girls • Secondary sexual changes in boys – **Safe sexual responsible behavior** – **Prevention of early pregnancy** • Ways of preventing early pregnancy • Consequences of early pregnancy – **Sexually transmitted infections (STIs)** – **Means of transmission of common STIs/HIV**	– In group, discuss on ways of avoiding unwanted pregnancy. – A role play/exercises and discussion on how STIs and HIV/AIDS are transmitted and can be prevented. – Role plays about sexual behavior and decision-making to practice communication, negotiation and refusal skill. – In group, make a discussion about positive ways of living with HIV and AIDS. – Create a poster to show how to love and accept all peoples, including those with HIV and AIDS.

– Explain how to live positively with HIV and AIDS.			– **Prevention and treatment of Sexually Transmitted Infections (STIs)** – **Living positively with HIV and AIDS**	– In group, read short case studies about early pregnancy and STIs, identify the causes, consequences, and preventive measures. – Invite a nurse or community health worker to discuss reproductive health, hygiene, and STI prevention with the class, followed by a question-and-answer session.
Links to other subjects: *Biology (reproductive system)*				
Generic competences: • ***Critical thinking:*** Developed through identifying and explaining the functions of male and female reproductive organs, analyzing changes during puberty, evaluating the causes and consequences of early pregnancy, and discussing ways of preventing STIs and HIV. • ***Research and problem solving:*** Developed through conducting research on reproductive health, investigating causes and prevention of STIs and HIV, analyzing case studies, and proposing responsible behaviours for maintaining reproductive health.				

- ***Communication (Literacy and Numeracy):*** Developed through group discussions, role plays, presentations, and sharing ideas about puberty changes, hygiene practices, prevention of unintended pregnancy, and respectful ways of supporting people living with HIV.

Basic values:

- ***Dignity and integrity:*** Developed through respecting personal dignity, practicing proper hygiene, making responsible decisions related to reproductive health, and showing respect towards people living with STIs or HIV.
- ***Respect for others and human rights:*** Developed through promoting non-discrimination, empathy, and support for people living with HIV and AIDS, while respecting individual differences and rights.
- ***Self-reliance:*** Developed through encouraging learners to take responsibility for their personal hygiene, make informed choices, protect themselves from infections, and seek appropriate health information and support.

Cross-cutting issues

1. ***Gender Education:*** Pupils should appreciate and respect the opposite gender. Teachers should guide them to positively accept and cope with body changes.
2. ***Comprehensive Sexuality Education:*** Adolescents must be taught to avoid risky sexual behaviour to prevent HIV/AIDS and teenage pregnancies. Emphasize abstinence and responsible behaviour.
3. ***Inclusive Education:*** Both able-bodied and disabled pupils experience physical changes. All pupils should be included in open, supportive discussions about these changes.
4. ***Peace and Values Education:*** Understanding shared changes promotes mutual respect. Encourages harmony, friendly relationships, and prevents teasing or discrimination.

Assessment criteria: *Assess pupils' ability to explain the function of male and female genital organs; the prevention, transmission and treatment of STIs and HIV and state ways of preventing unplanned pregnancy*

Materials: *Charts, underwear, sanitary towel, tampon Chart, examples of modern methods of contraception*

Topic area: Energy				
P6, SET	**Unit 13:** Energy management			**Number of periods: 7**
Key unit competence: Identify forms and sources of energy, explain energy transformations, and demonstrate responsible use of clean energy to protect the environment.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define the term energy – List different forms of energy. – Explain how energy changes from one form to another. – Explain why energy is important. – Name the main sources of energy.	– Choose the best form of energy to use in different situations. – Draw diagrams that show energy transformation.	– Be aware of using energy wisely and carefully. – Show concern about how energy use affects the environment. – Encourage the use of clean, renewable energy. – To do advocacy of the use of renewable energy	– **Definition and forms of energy** – **Energy transformation (Energy conversions)** – **Importance of energy** – **Sources of energy** – **Renewable and non-renewable energy** • Renewable • Non-renewable energy	– Investigate how fast objects roll down ramps of different heights. – In group, Research from library books/search engine and make discussion about the definition and forms of energy. – Observing chart about the uses of energy and discuss the importance of energy. – Working in small groups to produce different types of energy – Working small groups to practice the types of energy transformation

– Identify renewable energy sources and give examples and benefits		– Be aware of the existence of renewable energy resources	– **Advantages of using renewable energy**	– Observe, record information and present the findings. – In groups, discuss the economic impact of the use of energy. – In group, observe picture about energy sources and discover the existence of renewable and non-renewable energy. – Research and make group discussion about advantages of using renewable energy. – In groups, organize a debate on the advantages and disadvantages of renewable and non-renewable energy sources. – In groups, sort pictures or cards of different energy sources into renewable and non-renewable categories and discuss their impacts.
Links to other subjects: *Physics*				

Generic competences:

- ***Critical thinking:*** Developed through identifying different forms and sources of energy, analysing energy transformations, comparing renewable and non-renewable energy sources, and evaluating the effects of energy use on the environment.
- ***Research and problem solving:*** Developed through researching different energy sources, investigating renewable energy technologies, analysing energy challenges, and suggesting ways of promoting efficient and sustainable energy use.
- ***Creativity and innovation:*** Developed through designing models, demonstrating energy transformations, and developing creative ideas for conserving energy and promoting the use of renewable energy.

Basic values:

- ***Responsibility:*** Developed through promoting careful use of energy, reducing energy wastage, and understanding individual responsibility in protecting energy resources and the environment.
- ***Self-reliance:*** Developed through encouraging learners to make informed choices about energy use, identify suitable energy sources for different needs, and apply energy-saving practices in daily life.

Cross-cutting issues

1. ***Gender education:*** Both boys and girls can assemble biogas digester and a solar facility. It is not a preserve of the boy gender. Also, emphasize to pupils that anybody irrespective of their gender can pursue a carrier in engineering and energy conservation specialist. Give examples of role models who are successful engineers in the area where the pupils come from.
2. ***Standardization culture:*** Emphasize the need to use certified energy equipment. Caution pupils against using counterfeits which may lead to accidents or injury of users.
3. ***Inclusive education:*** All pupils should be encouraged to participate during lessons and practical. Special arrangement should be made to take care of pupils with special needs. For example, provide brail for blind pupils, large print text for those with sight problems and allocate physically challenged pupils to others to assist them during field trips and practical activities. Further, this category should be given tasks that they can manage during the practical sessions

4. ***Financial education:*** Pupils should be made aware of the fact that they need to save energy. This they can do by switching of energy utilizing equipment when not in use. Also, buying quality equipment will lead to saving money in the long run as they stay for long and costs on repair are reduced.
5. ***Environment and sustainability education:*** Bring to the attention of pupils the fact that some of the devices in this unit such as broken bulbs, used dry cells, spoilt car batteries, solar panels and generators are environmental hazards. They should appropriately be disposed of including some being taken for recycling.

Assessment criteria: *Assess pupils' ability to identify different forms and sources of energy, show how energy changes from one form to another, use energy wisely, and care about using clean energy to protect the environment.*

Materials: *Textbooks, charts, electrical apparatus, solar panels, wheel barrow, dry cells, fuel, wood,* rubber band, nail, magnet, *etc*

Topic area: Energy				
P6, SET	**Unit 14:** Magnetism			**Number of periods: 7**
Key unit competence: Explain how magnets work, identify their types and uses, make a temporary magnet, and demonstrate interest in exploring magnets in daily life.				
Learning objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the meaning of a magnet. – Recognize that a magnet can push or pull objects. – Explain what a magnet is made of. – Explain different types of magnets and magnetic fields. – List some everyday uses of magnets	– Compare and group magnets, non-magnets, and magnetic materials. – Make a temporary magnet. – Use a magnet to identify which objects are magnetic. – Demonstrate methods to magnetize an object.	– Show curiosity about how magnets work and how they are used every day. – Interest in designing or imagining useful tools/devices using magnets. – Willingness to ask questions and investigate magnetic properties.	– **Definition and types of magnets** – **Making a temporary magnet** – **Characteristics of magnets** – **Magnetic forces and magnetic materials** – **Magnetic field** – **Magnetic compass and uses of magnets:** • Magnetic compass • Uses of magnets	– In group, make a research from library books/search engines to discuss about the meaning and types of magnets. – Carry out practical activity to demonstrate the characteristics of non-magnets and magnetic materials. – Experiment demonstrating the properties of a temporary magnet. – Gather supplies: a paperclip or small nail, and a permanent magnet.

– Explain the properties of magnets.	– Test for Magnetic Materials – Accurately use a magnetic compass for orientation.			– Gathering supplies: a paperclip or small nail and a permanent magnet to make temporary magnet. – Investigate the magnetic field using a permanent magnet, a white sheet of paper and iron filings. – In groups, use two magnets to explore attraction and repulsion at different poles and record observations. – In groups, test various objects to predict and observe which materials are magnetic and which are not, then explain the results.
Links to other subjects: *Physics, magnetism*				
Generic competences: • ***Critical thinking:*** Developed through observing and analysing the properties of magnets, comparing magnetic and non-magnetic materials, investigating magnetic forces, and interpreting results from practical experiments. • ***Research and problem solving***: Developed through researching types and uses of magnets, carrying out investigations to identify magnetic materials, testing magnetic properties, and applying knowledge to explain the use of magnets in daily life. • ***Creativity and innovation:*** Developed through making temporary magnets, designing or imagining useful devices that use magnets, and exploring creative applications of magnets in everyday situations.				

Basic values:

- ***Self-reliance:*** Developed through encouraging learners to explore magnetic properties independently, conduct simple investigations, make temporary magnets, and apply knowledge of magnets to solve practical problems.
- ***Hard work:*** Developed through active participation in experiments, careful observation, recording results, and persistence in investigating how magnets behave under different conditions.

Cross-cutting issues

1. ***Gender education:*** Both boys and girls should participate equally in the activities. Also, emphasize to pupils that anybody irrespective of their gender can pursue a carrier in engineering. Give examples of role models who are successful engineers in the area where the pupils come from.
2. ***Standardization culture:*** Emphasize the need to use certified magnetic equipment. Caution pupils against using counterfeits which may lead to accidents or injury of users.
3. ***Inclusive education:*** All pupils should be encouraged to participate during lessons and practical. Special arrangement should be made to take care of pupils with special needs. For example, provide brail for blind pupils, large print text for those with sight problems and allocate physically challenged pupils to others to assist them during field trips and practical activities. Further, this category should be given tasks that they can manage during the practical sessions.
4. ***Financial education:*** Emphasize the need to buy quality equipment and devices made of magnets. By buying quality equipment, people save money in the long run as the equipment stay for long and costs on repair are reduced.
5. ***Environment and sustainability education***: Bring to the attention of pupils the fact that some of the devices made of magnets can be environmental hazards. They should appropriately be disposed of or should be recycled.

Assessment criteria: *Assess pupils' ability to explain how magnets work, identify different types and use of magnets, make and test a temporary magnet, and show curiosity and interest in exploring magnets in daily life.*
Materials: *Permanent magnets, white sheet of paper, sewing needle or safety pin, a bowl or jar, some water, a coin-sized cross section of cork, magnetic compass, iron filings, paperclips or small nails, different metallic objects, different non-metallic objects.*

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8. APPENDIX

Subjects and weekly time allocation for single shift in upper primary (P4 –P6)

#	Subjects to be taught in P4 -P6	Number of periods (Period= 40 minutes)
1	Kinyarwanda/ Rwanda Sign Language	9
2	English	9
3	Mathematics	9
4	Science and Elementary Technology	5
5	Social Studies and Religious Education	5
6	French	5
7	Creative Arts (Fine arts and Music)	2
8	Physical Education and Sport	2
9	Co-curricular Activities	4
	Total number of contact *periods* per week	50
	Total number of contact *hours*/week	33.3
	Total number of contact *hours* per year (39 weeks)	1,300