REPUBLIC OF RWANDA

MINISTRY OF EDUCATION

REB RWANDA BASIC EDUCATION BOARD

SCIENCE AND ELEMENTARY TECHNOLOGY SYLLABUS FOR UPPER PRIMARY P4-P6

Version 2

Kigali, 2022

SCIENCE AND ELEMENTARY TECHNOLOGY SYLLABUS FOR UPPER PRIMARY (P4-P6)

Second version

Kigali, 2022

FOREWORD

The Rwanda Basic Education Board is honoured to avail the syllabuses which serve as the official documents and a guide to competence-based teaching and learning, in order to ensure consistency and coherence in the delivery of a quality education across all levels of general education in the Rwandan schools.

The Rwandan education philosophy is to ensure that young people at every level of education achieve their full potential in terms of relevant knowledge, skills and appropriate attitudes that prepare them to be well integrated in the society and exploit employment opportunities.

In line with efforts to improve the quality of education, the government of Rwanda emphasises the importance of aligning the syllabus, teaching and learning and assessment approaches in order to ensure that the system is producing the kind of citizens the country needs. Many factors influence what children are taught, how well they learn and the competencies they acquire, among them the relevance of the syllabus, the quality of teachers' pedagogical approaches, the assessment strategies and the instructional materials available. The ambition to develop a knowledge-based society and the growth of the regional and global competition in the jobs market has necessitated the shift to a competence-based syllabus. With the help of the teachers, whose role is central to the success of the syllabus, the learners will gain appropriate skills and be able to apply what they have learned in the real life situations. Hence they will make a difference not only to their own lives but also to the success of the nation.

I wish to sincerely extend my appreciation to the people who contributed towards the development of this document, particularly REB and its staff, who organised the whole process from its inception. Special appreciation goes to the development partners who supported the exercise throughout. Any comment and contribution would be welcome for the improvement of this syllabus.

MBARUSHIMANA Nelson
Director General, REB

ACKNOWLEDGEMENT

I wish to sincerely extend my special appreciation to the people who played a major role in development of this syllabus. It would not have been successful without the participation of different education stakeholders and financial support from different donors that I would like to express my deep gratitude.

My thanks first go to the Rwanda Basic Education Board staffs who were involved in the conception and syllabus writing. I wish to extend my appreciation to teachers from pre-primary to university level whose efforts during conception were much valuable.

I owe gratitude to different education partners such as UNICEF, UNFPA, DFID and Access to Finance Rwanda for their financial and technical support.

We also value the contribution of other education partner organisations such as CNLG, AEGIS trust, Itorero ry'Igihugu, Gender Monitoring Office, National Unity and Reconciliation Commission, RBS, REMA, Handicap International, Wellspring Foundation, Right To Play, MEDISAR, EDC/L3, EDC/Akazi Kanoze, Save the Children, Faith Based Organisations, WDA, MINECOFIN and Local and International consultants. Their respective initiative, co-operation and support were basically responsible for the successful production of this syllabus by Curriculum and Pedagogical Material Production Department (CPMD).

MURUNGI Joan
Head of CTLR Department/ REB

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1. INTRODUCTION

1.1. Background to the Curriculum Review

The goal to develop a competence-based society, the globalization process, and particularly the growth of the world market and competition at the global level, as well as a shift from knowledge-based to competence-based curriculum necessitated a comprehensive review of the national curriculum to address the required skills in the Rwandan education system.

It is against this background that the SET syllabus at primary level was reviewed to ensure that the syllabus is responsive to the needs of the learner with a shift from knowledge-based learning to competence-based learning. Another innovation in the review is the inclusion of the ICT component

Competence-based learning refers to systems of instruction, assessment, grading, and academic reporting that are based on students demonstrating that they have acquired and learned the prerequisite knowledge, skills and attitudes as they progress through their education. Apart from being integrative, the newly revised syllabus guides the interaction between the teacher and the learner in the learning process. It further puts greater emphasis on skills a learner should acquire during each unit of learning. As a Competence-based syllabus, it elaborates on the three aspects of knowledge, skills and attitudes in science.

Apart from the introductory section that includes a brief background to the curriculum review, the rationale of teaching and learning SET, the objectives of learning SET, the pedagogical approach as well as the assessment approach, this newly revised curriculum is structured in such a way each topic area for each year of study is divided into a number of learning units for which the following elements are clearly described:

- A key Competence which is the expected outcome after the completion of the unit,
- The learning objectives expressed in terms of knowledge, skills and attitudes,
- The content to be covered, and
- The specific learning activities the learner will be involved in during learning process

At the end of the syllabus, there is a list of references and appendices including the weekly time allocation of a primary school leaver.

1.2. The Rationale of Teaching and Learning SET

1.2.1. Science and Elementary Technology and Society

Teaching elementary science 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 learners to have a greater awareness of the role of science and technology in everyday life. SET at primary school, enables the learner to develop competencies which have great impact on the society in general.

Teaching SET at primary school is further justified in that it helps to develop cultural and democratic notions of scientific literacy.

1.2.2. Science and Elementary Technology and learners

Learners have to be prepared from an early age for active and responsible citizenship. With this regard, SET strives to equip learners 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 learners' achievement, motivation, technological literacy and test scores.

1.2.3. Competences

Competence is defined as the ability to use an appropriate combination of knowledge, skills attitudes, values and behaviour to accomplish a particular task successfully.

Basic competences are addressed in the stated broad subject competences and in objectives highlighted year on year basis and in each of units of learning. The generic competencies, basic competences that must be emphasized and reflected in the learning process are briefly described below and teachers will ensure that learners are exposed to tasks that help the learners acquire the skills.

1.2.3.1. Generic competences

Critical and problem solving skills*:* The acquisition of such skills will help learners to think imaginatively, innovatively and broadly to evaluate and find solutions to problems encountered in our surrounding.

Creativity and innovation*:* The acquisition of such skills will help learners to take initiatives and use imagination beyond knowledge provided in classroom to generate new ideas and construct new concepts.
Research: This will help learners 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 being language teachers will ensure the proper use of the language of instruction by learners. The teachers should communicate clearly and confidently and convey ideas effectively through spoken and written by applying appropriate language and relevant vocabulary.

Cooperation, inter personal management and life skills: This will help the learner to cooperate as a team in whatever task assigned and to practice positive ethical moral values and while respecting rights, feelings and views of others. Perform practical activities related to environmental conservation and protection. Advocate for personal, family and common Unit health,hygiene and nutrition and responding creatively to a variety of challenges encountered in life.

Lifelong learning: The acquisition of such skills will help learners to update knowledge and skills with minimum external support. The learners will be able to cope with evolution of knowledge advances for personal fulfilment in areas that are relevant to their improvement and development.

1.2.3.2. Broad SET competences

The teaching of primary science and elementary technology should aim 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, learners will have acquired competences (knowledge, skills and attitudes) which will enable them to:

- demonstrate an understanding of the nature of science (NOS),
- 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 enquiry projects in the daily life.

Science and Elementary Technology and developing competences

The national policy documents based on national aspirations identify some 'basic Competencies' alongside the 'Generic Competencies'' that will develop higher order critical thinking skills and help student learn Science, elementary technology

and information communication technology for application in real life. The nature of learning activities which are mainly inquiry oriented contribute to the achievement of those competencies.

Through observations, experimentation, and presentation of information during the learning process, the learner will not only develop deductive and inductive skills but also acquire cooperation and communication, critical thinking and problem solving skills. This will be realized when learners make presentations leading to inferences and conclusions at the end of learning unit. This will be achieved through learner group work and cooperative learning of Science, elementary technology and information communication technology which in turn will promote interpersonal relations and teamwork.

The manipulation of apparatus and data during class experiments and undertaking of project work by learners will involve analytical and problem solving skills directed towards innovation, creativity and research activities by learners.

The acquired knowledge in learning science, elementary technology and information communication technology should develop a responsible citizen who adapts to scientific reasoning and attitudes and develops confidence in reasoning independently. The learner 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. PEDAGOGICAL APPROACH

Contrary to the old SET syllabus which was designed for only upper primary school, this subject has been expanded to cover the whole primary school from P1 to P6. In both lower and upper primary levels (P1-P3 & P4-P6), the syllabi are designed in English which is the medium of instruction. At both levels, the constructivist approach of

teaching science which reinforces the inquiry-based instruction will be at the heart of the implementation of the new revised syllabus.

2.1. Role of the learner

The approach considers the learning process to involve the construction of meaning by learners. Simply, it emphasises the need for children to think about scientific activity in order to make sense of and understand the scientific concepts being introduced. Traditionally, science instruction has relied heavily on teacher-lead, direct instructional strategies with learners being the recipients of knowledge. In the syllabus, learners are in the driver's seat which implies they will construct their knowledge by posing question, planning investigation, conducting their own experiments, analysing and communicating results. More specifically, when engaging in inquiry, learners will describe objects and events, ask questions, construct explanations, test those explanations against current scientific knowledge, and communicate their ideas to others. By so doing, the learners will take ownership of the learning process.

As for learners, their activities are indicated against each learning unit reflecting their appropriate engagement in the learning process. Even though they do not necessarily take place simultaneously in each and every SET lesson and for all levels, over time learners 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 learners 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).

2.2. Role of the teacher

The role of the teacher will remain critical however. Instead of being the "sage on the stage", the teacher will rather be "the guide on the side" who acts as facilitator in a variety of ways which include:

- encouraging and accepting student autonomy and initiative;
- using raw data and primary sources, along with manipulative, interactive, and physical materials;
- using cognitive terminology such as classify, analyse, predict, and create when framing tasks.
- allowing student responses to drive lessons, shift instructional strategies, and alter content;
- familiarizing themselves with students' understandings of concepts before sharing their own understandings of those concepts;
- encouraging students to engage in dialogue, both with the teacher and one another;
- encouraging student inquiry by posing thoughtful, open-ended questions and asking students to question each other;
- seeking elaboration of students' initial responses;
- engaging students in experiences that pose contradictions to their initial hypotheses and then encouraging discussion;
- providing time for students to construct relationships and create metaphors; and

- nurturing students' natural curiosity.

2.3. Special needs education and inclusive approach

All Rwandans have the right to access education regardless of their different needs. The underpinnings of this provision would naturally hold that all citizens benefit from the same menu of educational programs. The possibility of this assumption is the focus of special needs education. The critical issue is that we have persons/ learners who are totally different in their ways of living and learning as opposed to the majority. The difference can either be emotional, physical, sensory and intellectual learning challenged traditionally known as mental retardation.

These learners equally have the right to benefit from the free and compulsory basic education in the nearby ordinary/mainstream schools. Therefore, the schools' role is to enroll them and also set strategies to provide relevant education to them. The teacher therefore is requested to consider each learner's needs during teaching and learning process. Assessment strategies and conditions should also be standardized to the needs of these learners. Detailed guidance for each category of learners with special education needs is provided for in the guidance for teachers.

3. ASSESSMENT APPROACHES

Assessment is the process of evaluating the teaching and learning processes through collecting and interpreting evidence of individual learner's progress in learning and to make a judgment about a learner's achievements measured against defined standards. Assessment is an integral part of the teaching learning processes. In the new competence-based curriculum assessment must also be competence-based; whereby a learner is given a complex situation related to his/her everyday life and asked to try to overcome the situation by applying what he/she learned.

Assessment will be organized at the following levels: School-based assessment, District examinations, National assessment (LARS) and National examinations.

3.1. Types of assessment

3.1.1. Formative and continuous assessment (assessment for learning)

Continuous assessment involves formal and informal methods used by schools to check whether learning is taking place. When a teacher is planning his/her lesson, he/she should establish criteria for performance and behaviour changes at the beginning of a unit. Then at the of end of every unit, the teacher should ensure that all the learners have mastered the stated key unit competencies basing on the criteria stated, before going to the next unit. The teacher will assess how well each learner masters both the subject and the generic competencies described in the syllabus and from this, the teacher will gain a picture of the all-round progress of the learner. The teacher will use one or a combination of the following: (a) observation (b) pen and paper (c) oral questioning.

3.1.2. Summative assessment (assessment of learning)

When assessment is used to record a judgment of a competence or performance of the learner, it serves a summative purpose. Summative assessment gives a picture of a learner's competence or progress at any specific moment. The main purpose of summative assessment is to evaluate whether learning objectives have been achieved and to use the results for the ranking or grading of learners, for deciding on progression, for selection into the next level of education and for certification. This assessment should have an integrative aspect whereby a student must be able to show mastery of all competencies.

It can be internal school based assessment or external assessment in the form of national examinations. School based summative assessment should take place once at the end of each term and once at the end of the year. School summative assessment average scores for each subject will be weighted and included in the final national examinations grade. School based assessment average grade will contribute a certain percentage as teachers gain more experience and confidence in

assessment techniques and in the third year of the implementation of the new curriculum it will contribute 10% of the final grade, but will be progressively increased. Districts will be supported to continue their initiative to organize a common test per class for all the schools to evaluate the performance and the achievement level of learners in individual schools. External summative assessment will be done at the end of P6.

3.2. Record Keeping

This is gathering facts and evidence from assessment instruments and using them to judge the student's performance by assigning an indicator against the set criteria or standard. Whatever assessment procedures used shall generate data in the form of scores which will be carefully be recorded and stored in a portfolio because they will contribute for remedial actions, for alternative instructional strategy and feed back to the learner and to the parents to check the learning progress and to advice accordingly or to the final assessment of the students.

This portfolio is a folder (or binder or even a digital collection) containing the student's work as well as the student's evaluation of the strengths and weaknesses of the work. Portfolios reflect not only work produced (such as papers and assignments), but also it is a record of the activities undertaken over time as part of student learning. Besides, it will serve as a verification tool for each learner that he/she attended the whole learning before he/she undergoes the summative assessment for the subject.

3.3. Item writing in summative assessment

Before developing a question paper, a plan or specification of what is to be tested or examined must be elaborated to show the units or topics to be tested on, the number of questions in each level of Bloom's taxonomy and the marks allocation for each

question. In a Competence based curriculum, questions from higher levels of Bloom's taxonomy should be given more weight than those from knowledge and comprehension level.

Before developing a question paper, the item writer must ensure that the test or examination questions are tailored towards Competence based assessment by doing the following:

- Identify topic areas to be tested on 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.
- Prepare a table of specifications.
- Ensure that the verbs used in the formulation of questions do not require memorization or recall answers only but testing broad competencies as stated in the syllabus.

Structure and format of the examination:

There will be 2 papers in Science and Elementary Technology subject to be examined. Time allocated for all papers will depend on their respective weight. In case of learners with special education needs, the time allocated for each paper will depend on their needs.

The papers will be structured as follows:

Component Weighting

COMPONENT	WEIGHTING
Paper 1 which measures knowledge and understanding (lower order thinking level) • Structured short answer questions.	Structured short answer questions will have 40% of the final marking of the assessment
Paper 2 which measures skills and advanced level of understanding (higher order thinking level) • Unstructured answer questions or extended essay questions.	Unstructured answer questions will have 60 % of the final marking of the assessment

3.4. Reporting to parents

The wider range of learning in the new curriculum means that it is necessary to think again about how to share learners' progress with parents. A single mark is not sufficient to convey the different expectations of learning which are in the learning objectives. The most helpful reporting is to share what students are doing well and where they need to improve.

4. RESOURCES

4.1. Material resources

For successful implementation of this syllabus the material resource is required. Thus, the following minimum requirement should be met:

- The school infrastructures with its surrounding;
- Textbooks and other written materials (syllabus, charts, books, newspapers, shapes, etc…),

- A science kit
- Improvised teaching aid
- Whenever possible, ICT equipment including the internet network would be an additional asset.

4.2. Human resource

The effective implementation of this syllabus needs a joint collaboration of educators at all levels. Given the material requirements, teachers are expected to accomplish their noble role as stated above. However teachers should be equipped with a strong pedagogical content knowledge (PCK) and enough teaching experience. Furthermore, a science and elementary technology teacher 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.

On the other hand school head teachers and directors of studies should be trained on the use of Competence-based syllabus then, they will be able to make a follow-up and assess the teaching and learning of this subject due to their profiles in the schools. These combined efforts will ensure bright future careers and lives for learners as well as the contemporary development of the country.

Skills and attitude required for the teacher of SET:

- Engage students in variety of learning activities,
- Apply appropriate teaching and assessment methods,
- Adjust instructions to the level of the learner,
- Creativity and innovation, makes connections/relations with other subjects,

- Show a high level of knowledge of the content,
- Develop effective discipline skills manage adequately the classroom,
- Good communicator, Guide and counsellor,
- Passion for children teaching and learning.

5. SYLLABUS UNITS

5.1. Presentation of the Structure of the syllabus units

Science and Elementary Technology subject is taught and learned in lower and upper primary education as a core subject. At every grade, the syllabus is structured in Topic Areas, and then further broken down into Units. The units have the following elements:

1. Unit is aligned with the Number of Lessons.
2. Each Unit has a Key Unit Competence whose achievement is pursued by all teaching and learning activities undertaken by both the teacher and the learners.
3. Each Unit Key Competence is broken into three types of Learning Objectives as follows:
    a. *Type I:* Learning Objectives relating to Knowledge and Understanding (*Type I* Learning Objectives are also known as Lower Order Thinking Skills or LOTS)
    b. *Type II a*nd *Type III:* These Learning Objectives relate to acquisition of skills, Attitudes and Values (*Type II* and *Type III* Learning Objectives are also known as Higher Order Thinking Skills or HOTS) – These Learning Objectives are actually considered to be the ones targeted by the present reviewed syllabus.
4. Each Unit has a Content which indicates the scope of coverage of what a teacher should teach and learner should line in line with stated learning objectives

5. Each Unit suggests Learning Activities that are expected to engage learners in an interactive learning process as much as possible (learner-centered and participatory approach).
6. Finally, each Unit is linked to Other Subjects, its Assessment Criteria and the Materials (or Resources) that are expected to be used in teaching and learning process.

In all, the syllabus of Science and Elementary Technology for upper primary level has got 6 Topic Areas (Tools and Objects production, ICT, Our environment, the human body, Energy and materials and state of matter). As for units, they are 14 in p4, 16 in p5 and 16 in p6.

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

5.2.1. Key Competences at the end of Primary four

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

- Use and maintain agricultural tools safely;
- Make play, utility and learning objects;
- Differentiate XO' interfaces and operate within them for formatting and editing texts and drawing shapes.
- Explain effects of air, wind and sound in environment;
- Protect school surrounding environment against erosion
- Recognize animal classification according to their features
- Practice rabbit keeping.
- Explain the life cycle and function of each part of the plant.
- Explain maintenance of human sensory organs, skeleton and muscles.

5.2.2. Syllabus units for Primary Four

<table>
<tr><th colspan="5">Topic Area: Tools and Objects production</th></tr>
<tr><th>P4, SET</th><th colspan="3">Unit 1: Agricultural tools</th><th>Number of periods: 12</th></tr>
<tr><td colspan="5">Key Unit Competence:

To use and maintain agricultural tools safely.</td></tr>
<tr><th colspan="3">Learning Objectives</th><th rowspan="2">Content</th><th rowspan="2">Learning Activities</th></tr>
<tr><th>Knowledge and understanding</th><th>Skills</th><th>Attitudes and values</th></tr>
<tr>
<td>• Identify the common used agriculture tools
• Explain the use of agricultural tools
• Explain the potential dangers of the misuse of agriculture tools and how to prevent them</td>
<td>• Draw and name different agriculture tools
• Group agriculture tools based on their use
• Apply techniques of maintaining agricultural tools
• Apply techniques of storing agriculture tools</td>
<td>• Display awareness about the proper and safe use of agriculture tools
• Be careful when using agriculture tools
• Show concern about prevention against potential dangers of agriculture tools ‘misuse</td>
<td>• The common agricultural tools:
Hoe, spade, rake, axe, wheelbarrow, machete, watering can, trowel, milking can, spraying pump, file
• Uses of agricultural tools:
Digging, watering, transplanting, sharpening, cutting, transporting
• Maintenance of agricultural tools:
Sharpening, oiling, cleaning, repairing or replacing damaged parts, keeping them in a dry place.
• Storage of agricultural tools
• Dangers of the misuse of agricultural tools:
Cutting oneself or others, inhalation of poison from agricultural chemical
• Precaution when using agricultural tools:
Boots, gloves, masks</td>
<td>• Observation: In class, to display a range of agriculture tools and learners try to name them and match them with their use
• Visiting agricultural farm to observe the use, to manipulate and to maintain available agricultural tools.
• Role play about the use of and care for agriculture tools
• Group work to discuss about the prevention against possible dangers of misusing of agricultural tools and makes presentation.</td>
</tr>
<tr><td colspan="5">Links to other subjects: Agriculture</td></tr>
</table>

Assessment criteria: *Use and maintain agricultural tools safely.*
Materials: *Range of agriculture tools. Eg. Hoe, spade, rake, axe, wheelbarrow, machete, watering can, trowel, milking can, spraying pump, boots and gloves.*

Topic Area: Tools & Objects production				
P4, SET		**Unit 2: Objects production**		**Number of periods: 13**
Key Unit Competence : To make play, utility and learning objects				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify the most common local materials used in making various objects – Explain the techniques of making each type of objects based on the materials used – Explain the maintenance of toys, utility and learning	– Select materials by type of objects to make – Make toys, utility and learning objects using appropriate materials (either clay, sticks or paper) – Display dexterity for safety purpose in making objects	– Show awareness of the use of local materials to make some useful objects (toys, utility and learning) – Show curiosity and willing to make certain objects with local materials – Appreciate well-made play, utility and learning objects – Show concern about the safety both in making and keeping objects	– **Making toys in clay and wires:** bicycle, dolls, animals, motorcycles – **Making utility objects *in sticks*:** basket – **Making utility objects *in banana fibres*:** dustbin, mat – **Making learning materials *in paper*:** triangle, rectangle and square – **Maintenance of utility and learning objects:** Keeping/storing them in a dry, cool and clean place	– Brainstorming: From a range of local materials learners make patterns of those that can be used to make specific objects (play, utility, learning) – Practical group work: Different groups collect either: • Clay and wires to make toys , • Fibres, knife/ razor-blade, needle or lancelet, wood, sisal, sticks, to make utility objects, • Papers, manilapaper and scissor to make learning objects individually. - Project: Learners choose specific object to make over a week or two and bring them to be displayed in their classroom and assessed. - Discussion in small groups about the maintenance of various objects produced.

objects produced				
Links to other subjects: *Art and craft*				
Assessment criteria: *Faster making smart play, utility and learning objects*				
Materials: *Clay, wires, fibres, knife/ razor-blade, needle or lancelet, wood, sisal, sticks, manila paper and scissor*				

Topic Area: ICT				
P4, SET			**Unit 3: Computer my friend**	**Number of periods: 21**
Key Unit Competence: TO use common ICT terms and differentiate Sugar and Gnome user interfaces				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
-Explain the common terms used in ICT. -List the common ICT terminologies -Identify the elements in sugar user interface. -Explore different activities. -Switch from Sugar to Gnome interfaces -Identify and	-Differentiate and use ICT terms in daily life -Manipulate with guidance different activities in Sugar Interface -Interact with Sugar user interface to open and close an activity -Practice to call and send SMS as the means of communication using mobile phones -Perform deletion	-Appreciate the importance of terms used in ICT -Understand other perspectives and be aware of new vocabularies in ICT. -Be excited by the design of the sugar interface -Be aware of the two user interfaces and their strengths. – Pay attention on how to manage documents in the journal.	**Common ICT terms used in ICT field:** • Computer(definition, role, switch on/ off) • Data and Information(Typing text from the keyboard) • Communication(definition, role, call/send messages) • Technology(type a text, call, send messages) • Internet, Website, WWW (definition, Type a domain name in the address bar in the browse activity) • Activity(open, close) • Project • Digital and Analogue • Hardware(Keyboard, touchpad) Software(activities) **Sugar interface** Search in home(Display quickly an activity), favorite view, List view **Gnome interface** Desktop (creating folders), Panel, Window (s), Workspaces(writing a text)	-Exercise on switching the computer **on** and off. -Practicing typing a text using the keyboard -Individual exercises on calling and sending messages using a mobile phone -Exercises to identify ie name, opening and closing and Browse activity in sugar interface -Practice switching from Sugar to Gnome and vice versa. -Individual exercises on renaming and deleting a document in the Journal

explore elements in Gnome user interface -Locate name and Erase a document in the journal -Arrange documents and apply search techniques in the journal	and renaming a document -Produce a document and be able to share it with a friend -Practice different techniques to search a document -Copy a document from different locations	– Respond to different ways of searching a document – Appreciate the process of sending and receiving a documents	File manager(searching programs) **Use of the Journal** • To save in the Journal • To open, and to close external memories • To rename, erase and send a document • To copy from flash to journal and vice versa **Search and retrieve a saved document in the Journal by classifying items according to :** • Anything • Anytime • Sort view **Search in Journal by entering the item name in search key**	-Small group discussion on sending documents to each other -Exercises on using different techniques in searching a document in the journal -Practice on copying a document from flash to journal and vice versa
Links to other subjects: *English: ICT vocabulary and origins / links to literal meanings (eg keys, windows, file, mouse, memory, web etc)*				
Assessment criteria *:Learners should be able to use common ICT terms, differentiate Sugar and Gnome user interfaces and apply file management in the Journal*				
Materials: *XO Laptop, computer, flash disk, SD card, CDs, books, notebook, pen, blackboard, chalk.*				

<table>
<tr><td colspan="5">Topic Area: ICT</td></tr>
<tr><td colspan="2">P4, SET</td><td colspan="2">Unit 4: Writing skills</td><td>Number of periods: 9</td></tr>
<tr><td colspan="5">Key Unit Competence: To perform write activity</td></tr>
<tr><td colspan="3">Learning Objectives</td><td rowspan="2">Content</td><td rowspan="2">Learning Activities</td></tr>
<tr><td>Knowledge and understanding</td><td>Skills</td><td>Attitudes and values</td></tr>
<tr><td>– Describe the different ways of formatting and editing a text
– Apply the keyboard special keys according to their roles.
– Use the special keys to interact with the sugar interface
– Identify the special keys and use them accordingly</td><td>– Write a text and apply formatting methods and techniques
– Construct or copy paragraphs and texts
– Perform writing text and paragraphs with a more speed
– Use correctly the special keys and touchpad</td><td>– Appreciate changing a text in different smarter ways.
– Paying attention on typing errors
– Notice the use the special keys
– Read voluntarily what they have written.
– Care for the use of special keys</td><td>– Text formatting
• Bold, Italics and Underline
• Font size and font style
• Using colors
• Capital and small letters
• Save and open
• Share and Collaboration
– Text selection
Select a character, word sentence, paragraph and a whole document
– The Keyboard and Touchpad
Frame key, volume controls brightness control, erase/delete key, arrow keys, alt key, control key, search keys, view keys, enter key</td><td>– Exercises on changing font type, enlarging and reducing font size
– Exercises on changing text colors, typing, moving and checking spelling in the text
– Individual exercises on using a frame key also reducing and adding volume
– Practice on using the left and right click on the touchpad (mouse)
– Group work on searching/connecting to friends in the neighborhood view
– Practice using arrow keys to move the cursor downward, upward and in different ways
– Individual exercises on writing an autobiography</td></tr>
<tr><td colspan="5">Links to other subjects:: English – ICT vocabulary and origins / links to literal meanings (eg keys, windows, file, mouse, memory, web etc</td></tr>
<tr><td colspan="5">Assessment criteria: Learners should be able to use the keyboard and touchpad (mouse) correctly, and use the special keys, and perform text formatting accurately.</td></tr>
<tr><td colspan="5">Materials: XO Laptop, books, notebook, pen, blackboard, chalk</td></tr>
</table>

<table>
<tr><td colspan="4">Topic Area: ICT</td></tr>
<tr><td colspan="2">P4, SET</td><td>Unit 5: Graphics and multimedia</td><td>Number of periods: 7</td></tr>
<tr><td colspan="4">Key Unit Competence: To use Paint activity to draw and color different shapes and to enhance project work</td></tr>
<tr><td colspan="3">Learning Objectives</td><td rowspan="2">Content</td><td rowspan="2">Learning Activities</td></tr>
<tr><td>Knowledge and understanding</td><td>Skills</td><td>Attitudes and values</td></tr>
<tr><td>– Draw by free hand class and home objects.
– Apply different colours to improve drawn objects.
– Insert a comment on an image to make it more meaningful
– Resize and locate the image in the paint window.</td><td>– Control the movement of the touchpad (mouse)
– Draw and produce images for different objects
– Master drawing geometric shape seen in class
– Copy the images drawn by others.
– Improve the presentation of the image</td><td>– Paying attention to typing errors
– Notice the use the special keys
– Read the comments attached to images.
– Care for the use of special keys</td><td>– Definition and role of the Paint application
– Starting the Paint Activity
– Paint window(environment)
• Primary tool bar
• Secondary tool bar- edit
• Secondary tool bar -shapes
• Tool(brush) properties
• Secondary tool bar -images
– Drawing using free hands
Drawing tools (pencil, eraser and bucket)
Drawing using shapes:
Geometric shapes
– Comments on a picture:
Texts,colors
save, close and open an activity</td><td>– Exercises on drawing variant shapes commonly met at home, at school, and in their environment
– Practice editing and cropping images made by other activities
– Practice on managing colors to produce a smart image or photos
– Exercises on commenting on the images so that it is meaningful.
– Exercises on drawing lines, square, rectangle and circle using shapes and /or free hand
– In pairs using Paint draw a plan of the classroom and color it in.</td></tr>
<tr><td colspan="4">Links to other subjects: Mathematics, Geometry (regular and irregular shapes) , Art (Drawing techniques and use of color)</td></tr>
<tr><td colspan="4">Assessment criteria: Learners are be able to use the Paint Activity to draw, colour and design different shapes and improve projects correctly.</td></tr>
<tr><td colspan="4">Materials: XO Laptop</td></tr>
</table>

Topic Area: ICT		
P4, SET	**Unit 6: Programming for children**	**Number of periods: 22**
Key Unit Competence: To design and construct geometric shapes in Turtle art activity and create animations using ScratchActivity		

Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify different tools in the turtle art window. – Describe different components of scratch window. – Associate different commands to develop animations. – Outline steps of saving and opening a project. – Explain how to save and open	– Construct and produce different geometric shapes using turtle art instructions. – Observe practice and organise the turtle art instructions correctly. – Practice and correctly manage the components of scratch window – Create and animate objects by arranging the instructions required in the proper sequence	– Conceptualize the ICT contribution in the real life. – Express the desire to draw more colorful drawings using turtle art commands. – Appreciate an animated objects. – Pay attention on how to use command and make animations. – Appreciate how to arrange commands and produce animations	**Elements of turtle art window** Main toolbar(drag and drop the blocks),palettes tool bar **Use turtle art instructions:** Forward, back, left, right, arc, clean **Drawing:** Lines: vertical, horizontal and oblique. Square, rectangle and circle **Save a document, close and open Turtle Art activity.** **Identification of the components of scratch window:** Command palette, script pane, stage pane, thumbnails pane **Object animations (Animate an object):** Choose new sprite from file, change background, add blocks	– Practicing how to drag and drop the blocks from the Turtle Palette to the main area – Practicing how to delete a block by dragging it back onto the palette – In Pairs work exercises on correctly arranging the blocks in order to draw different lines – Individual exercises on drawing a square, rectangle and a circle by arranging the blocks in the correct sequence. – Group discussion on calculating areas and perimeters of the shapes – Practicing and learning Scratch programming environment – Exercises on the Looks and Motion Menus and writing a sequence of instructions for a specific outcome – Practicing and Learning on choosing

a file	required		to scripts (drag and drop commands), play/ execute scripts , save and open a project, close and open scratch activity	sprite, changing costumes and backgrounds – Exercises on creating animations, using the steps of saving and opening a project in Scratch
Links to other subjects: *Mathematics*				
Assessment criteria: *To design and construct geometric shapes in Turtle Art activity and create animations using Scratch Activity*				
Materials: *XO Laptop ,Black board, chalk*				

Topic Area: Our environment				
P4, SET		**Unit 7: Air, wind and sound**		**Number of periods: 16**
Key unit Competence: To explain properties and importance of air and effects of wind as well as sound in surroundingenvironment				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify properties of air – Explain the composition of air – Explain the utility of air components in daily life – Explain the dangers of component of air and how to prevent them	– Design devises of get enough air in homes / classroom. – Compare the various components of the air basing on their utility – Design an experiment to identify the side effects of Carbon monoxide	– Appreciate the importance of air and wind in our environment – Show concern for dangers brought by strong wind and how to overcome them – Develop positive attitude towards the utility of Oxygen – Show concern on the utility and dangers of Carbon dioxide – Be aware of the dangers of Carbon monoxide	– **Main Properties of air:** Air occupies space, hasweight, and can be compressed – **Uses ofair composition:** ***Use of Oxygen*** Plant germination, Plant and animal respiration, combustion ***Use of Carbon dioxide:*** Photosynthesis for green plants, Making industrial beverages (beverage carbonation)	– Practical work: Collecting balloons, beam balance, a kit to demonstrate that air has weight, occupies space and can be compressed – Performing an experiment to prove the existence of oxygen in air and its utility: burning a candle, and cover it by a transparent cup – Investigation: to prove the utility of Carbon dioxide for green plants: covering grass with an opaque object (like wide stone) and observe the color of the covered grass after some days (two, four, six and ten days) – Investigation: The dangers of Carbon monoxide: in a closed container containing a living animal (e.g. lizard), burning a candle and observe. The system to be compared

them – Identify the types of wind/ – Explain the importance of air and wind in the environment – Explain the dangers of wind and how to prevent them. – Explain the nature of the sound – Explain the sound propagation – Distinguish sound from noise – Identify the damaging effects of noise on hearing system – Explain how to	– Compare the types of winds – Apply techniques of prevention our environment from strong wind – Design and use a devise showing that the sound travels through a medium	– Show concern about air pollution issues – Show awareness about the effects of sound on human hearing – To be careful and avoid long exposure to harmful noise	Used in fire extinguishers – **Dangers of components of air (Carbon dioxide water) :**Global warming – **Types of wind** Light wind, breeze wind, storm wind – **Use of air and wind** Source of energy, Birds to fly, Clouds to move for rain distribution, Drying of clothes – **Dangers of wind** Destroy plants and houses, Can make boats sink, Flying plane crash – **Prevention of dangers of wind** Planting trees in our environment – **The nature of sound**	with a similar one which doesn't have a burning candle inside. – Discuss how we know it is windy by looking out a window – Have the students list and discuss all the things that they have seen wind do – Practical: Collect millet, sorghum, winnower to practice and show that wind can be used in winnowing – Project: Collect various samples of seedlings, plant three and do a follow up (this can be extended to many years in school) – Field trip: Visit areas spoiled by wind to compare the effects of the wind in the environment – Brainstorming: to gain understanding of the nature of the sound – Group discussion: Learners discuss about the sound propagation and transmission – Role play: In small groups make a devise (two boxes with a long string) and investigate the sound transmission. – Practical: In small groups use two tubes to illustrate the sound reflection – Produce sound and noise and discuss their differences

protect ears from noise	Design and use devises to protect one's ears from noise		– **Sound production** – **Sound propagation and transmission.** – **Production of echo: Reflection of sound** – **Sound and noise** – **Damaging effects of noise** – **Protection ears from noise**	– Discussion: Discuss the damaging effects of noise – Discussion: on ways of protecting ears from noise
Links to other subjects: *Social studies: weather*				
Assessment criteria: *Apply learning to perform experiments on properties of air and management of wind*				
Materials: *winnower ,balloons, seedling, beam balance*				

Topic Area: Our Environment				
P4, SET	**Unit 8: Soil**			**Number of periods: 12**
Key Unit Competence: To choose good soil and prevent it from erosion				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
- Define soil - Identify types of soil. - Identify different components of the soil - Explain the use of soil - Describe the characteristics of fertile soil - Define soil erosion - Identify methods and techniques of erosion prevention	- Recognize suitable soil for cultivation - Match the type of soil with its use - Apply various methods and techniques to stop soil erosion	- Display awareness about the socio-economic importance of the soil - Show concern about good soil management - Show concern and advocacy about environmental protection issues - Show concern about dangers of soil erosion	– **Definition of soil** – **Types of soil:** • Loam, clay and sand – **Composition of soil:** – **Use of soil** – **Characteristics of fertile soil** – **Soil erosion/definition** • Agent of soil erosion • Causes of erosion • Types of erosion • Prevention of erosion	- 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 each type of soil - To carry out an investigation on the characteristics of fertile 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.
Links to other subjects: *Agriculture*				
Assessment criteria*: classification of soil and soil erosion protection*				
Materials: *Different samples of soil, field out of school*				

Topic Area: Our Environment				
P4, SET		**Unit 9: Animals**		**Number of periods: 14**
Key Unit Competence: To classify the animals according to their backbone, locomotion, feeding, reproduction and respiration mode.				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Name the major groups of animals – State the major classes of animals	– Differentiate external features of animals.	– Display awareness of social-economical role of animals in the society. – Show concern about protecting animals' lives in our environment as a way to maintain wild life. – Develop curiosity and inquisitiveness spirit towards animals.	– **Animal classification according to a backbone** ➢ **Classes of vertebrates:** Mammals, birds, reptiles, amphibious and fish. • **Mammals**: eg. Cow : External : head, legs, tail, udder, hones, abdomen, anus, Internal: lungs, liver, heart, alimentary canal • **Birds: eg. Hen:** External: head, beak , belly, tail, scales, legs, feathers Internal: alimentary canal, • **Fish: tilapia:** External: dorsal, nostril, pectoral fin, pelvic fin, ventral fin, caudal fin, scales Internal : gills • **Reptile : snake** External : head, scales , tail Internal: gills, intestines • **Amphibian : frog** External : head, thorax, abdomen, legs Internal : heart, stomach, intestines	– Group work: Classification of animals in our surroundings and group them according to their major characteristics – Group work to discuss about the respiration of vertebrates – Visiting the school

– Give respiration mode of animals – Describe the different ways of animal locomotion – Identify different modes of animal feeding – Identify different modes of animal reproduction	– Make patterns of different animals basing on how they move, feed, respire, and reproduce in our environment .		➢ **Invertebrates:** **Insect**: eg. :locust, butterfly: Proboscis, antenna, leg, thorax, abdomen, wings, spiracles – **Animal classification according to respiration mode:** Through lungs (e.g. cow, goat), gills (fish), skin (worms), spiracles (insects), lungs and skin (adult frog) – **Animal classification according to the locomotion mode:** Flying, crawling, jumping, walking, swimming – **Animal classification according to the feeding mode:** Herbivores, insectivores, carnivores, omnivores, granivores , rodents – **Animal classification according to their reproductive mode** Egg laying, producing young one alive	surroundings, discuss how animals move, feed and reproduce – Group work to discuss about different ways of animal breathing and experiment with insects (cockroach, grasshopper) – Play role to simulate animals' locomotion. Crawl, walk, fly etc. – Visiting the school surroundings, discuss how animals move and feed
Links to other subjects: *Agriculture: farm management.*				
Assessment criteria: *Groups of animal according their locomotion, feeding, respiration and reproductive modes.*				
Materials: *Variety of animals, container, water*				

Topic Area: Our Environment				
P4, SET		**Unit 10 : Animals management**		**Number of periods: 12**
Key Unit Competence : To explain and practice the rabbit keeping				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify the conditions of a good rabbit hutch – Explain the criteria for choosing a rabbit to rear – Explain the proper feeding of rabbits – Identify the most common diseases of rabbits and their prevention – Point–out the importance of practicing rabbit farming	– Distinguish male from female rabbit – Do right choice of rabbits to rear – Design a small scale rabbit keeping project – Apply basic techniques of cuniculture (rabbit farming).	– Show interest in practicing cuniculture – Develop awareness of the socio-economical and welfare value of practicing cuniculture. – Develop curiosity towards knowing more about rabbits' lives and other domestic animals.	• **Conditions of good rabbit hutch** • **Characteristics of good rabbits:** Good female rabbit (doe) characteristics Good male rabbit (buck) characteristics • **Criteria for choosing rabbits to rear (rabbit breeding guide)** • **Proper feeding of rabbits** • **Rabbit health** • **Common diseases:** Coccidiosis**, e**ar scabies, tapeworms**, p**neumonia • **Importance of rabbit farming**	– Field visits of different rabbit farms, make observations and group discussions aiming to outline the conditions of a good rabbit hutch; – Group discussion regarding characteristics ofgood male and good female rabbit to cross; – Group discussion the practice of good feeding and hygiene for rabbits; – Collecting hay, good high fiber pellet, fresh vegetables and clean water to feed rabbits; – Research using library books/search engines, then group discussion on common diseases of rabbits – Making group discussion on the importance of rabbit farming – At school (especially rural schools), learners implement a small scale cuniculture project. They will feed them, clean the hutch and diagnose for possible diseases
Links to other subjects: *Agriculture: farm management*				
Assessment criteria: *Manage the rabbit farm properly*				
Materials: *Rabbits, rabbit hutch, hay, good high fibre pellet, fresh vegetables and clean water*				

Topic Area: Our Environment				
P4, SET		**Unit 11: Plants**		**Number of periods: 12**
Key Unit Competence: To demonstrate stages of germination and establish the relationship between parts of plants andtheir function				
Learning Objectives			**Content**	Learning Activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the process of germination – Identify types of germination. – Explain stages of germination - Label different parts of the plant	– Select good seeds – Design a setting enabling the germination of some samples of seeds – Draw and label a sample of a plant - Plant some samples of seeds in the school garden and ensure the follow up	– Show curiosity in exploring the germination of a variety of seeds Show the awareness about the importance of plants to the environment and human beings. -Develop positive attitudes toward conservation of	– **Definition of germination** – **Conditions of germination** • Water • Oxygen • Optimum temperature – **Types of germination** • Hypogeal germination e.g. maize • Epigeal germination e.g. beans – **Stages of germination** – **Types of plants** : Trees, shrubs, herbs	– Observation: Take learners out of the classroom and guide them in observing a variety of plants and record information – Group discussion and report on the conditions of germination – Project: In the classroom corner carry out an investigation on the germination of beans and maize seeds: • Prepare and label transparent plastic pots as follow: ▪ Pot N°1: empty pot ▪ Pot N°2: poor a very small amount of water ▪ Pot N°3: poor water in about ½ of the pot ▪ Pot N°4: put slightly wet soil in the pot ▪ Pot N°5: put slightly wet washed sand in the pot (small particles)

- Explain the functions of each parts of the plant		plants as part of living things.	– **Functions of parts of the plant** ▪ Roots ▪ Stem ▪ Leaf ▪ Flower . ▪ Fruit	***Note****: prepare in duplicate of each type of pot* • Place the first pot in a warm place and the second pot in a cold place (refrigerator) • In each of the 10 pots, put two seeds of beans and two seeds of maize • Leave for two weeks, but check every two days and record what you find • Keep the soil moist by watering it every day • Record your observations as the seeds germinate and seedlings begin to sprout from the seeds. – Visit the school surrounding 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.
Links to other subjects: *Agriculture: farm management*				
Assessment criteria: *Application of germination protocol, presentation of output from group discussion*				
Materials: *Seeds of maize and beans, transparent plastic pots, water, refrigerator*				

Topic Area: The Human Body				
P4, SET			**Unit 12: Human sensory organs**	**Number of periods: 27**
Key Unit Competence: To explain the structure, function and maintenance of the human sensory organs				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the functional mechanism of sensory organs		– Show concern about the mechanism of action of all sensory organs	**Functional mechanism of all sensory organs:** Reception of the stimulus by a sensory organ, transmission of the information to Central Nervous System(CNS), Integration of the information in the CNS, interpretation of the information, feedback to the sensory organ.	❖ Group research on the functional mechanism of all sensory organs from library or search engines
– Identify parts of the skin – Explain functions of the skin – Explain properties of the skin – Explain how to take care of the	– Draw and label the structure of the skin – Apply principles of hygiene of the skin	– Show concern about the mechanism of action of all sensory organs – Show concern about the hygiene and care of the one's own skin	Structure, function and maintenance of sensory organs: **<u>THE SKIN</u>** – Identification of the parts of skin – Specific function of the skin	❖ Observation: In small groups – Using a lens, observe different types of the skin (in the palm of the hand, the skin on arms or on the head) – On wall charts, observe the inner parts of the skin – Group discussion: – Discuss the functions and properties of the skin

skin – Recognize some skin diseases – Explain how to deal with skin accident –	– Intervene efficiently in case of skin accident	– Develop habits to regularly consult physicians both for prevention and treatment of skin diseases.	– Main properties of the skin – Hygiene of the skin – Skin diseases, – Skin accidents – Skin accidents first aid	– Discuss and implement the rules of skin hygiene. – Group discussion on common skin diseases – Role play simulating the first aid intervention in case of skin accident
– Identify the different zones of the tongue – State the different functions of the tongue – Explain the hygiene and care of tongue – Outline the tongue disorders and its possible accidents	– Draw and label the tongue – Apply techniques of cleaning the tongue	– Develop habit of keeping the tongue cleaned – Develop awareness of prevention against possible tongue accidents Develop habit of consulting a physician both for prevention and treatment of possible tongue diseases.	**THE TONGUE** – Identification of different zones of the tongue – Specific function of the tongue – Hygiene and care of the tongue – Tongue disorders – Tongue accidents	❖ Observation: Learners observe on the wall chart and name different zones of the tongue then draw in their exercises book – Practical work: Taste different food samples to locate the different parts of the tongue – Group discussion: In small group discuss the functions of the tongue – Practical: Each individual pupil use a brush to clean the tongue – Group discuss on common tongue disorders and accidents
– List the different parts of the nose – Explain the function of the nose – Explain how to maintain hygiene of the	– Draw and label the different part of the nose – Develop smelling skills – Apply accurately	– Appreciate and value the importance of the nose in human being life – Develop awareness of prevention	**THE NOSE** – Identification of the parts of the nose – *Specific* function of the nose – Hygiene of the nose – Diseases of the nose and their causes	❖ Observation: Learners observe on the wall chart and name different parts of the nose then draw in their exercises book – Practical work: Smell different samples of various substances to identify the substance by its smell – Group discuss on common nose

nose – Identify the most common nose diseases and their possible causes – Explain the nose diseases, accidents and their prevention	various techniques of maintaining hygiene of the nose – Intervene efficiently in case of skin accident	against possible nose accidents – Develop habit of consulting a physician both for prevention and treatment of possible nose diseases.	– Prevention of nose diseases – Accidents of the nose	disorders and accidents – Discussion: In small groups discuss about the most common nose diseases and their causes – Practical: Each individual pupil clean the nose by removing mucus in excess or other particles in the nostril & nasal cavity – Role play simulating the first aid intervention in case of nose accident
– Identify and describe the main parts of the ear – State the function of the ear – Explain the hygiene of the ear – Identify the diseases of the ear and their possible causes	– Draw and label the different parts of the ear – Apply accurately various techniques of maintaining hygiene of the ear	– Appreciate and value the importance of ears in human being life Develop habit of regularly clean one's ears – Develop habit of consulting a physician both for prevention and treatment of possible ears disorders.	**<u>THE EAR</u>** – Identification of the parts of the ear • *Outer ear* • *Middle ear* • *Inner ear* – Specific function of the ear – Hygiene of the ear – Diseases of the ear and their causes	❖ Observation: Learners observe on the wall chart and name different parts of the ear then draw in their exercises book – Discussion: In small groups discuss about the hygiene of the ears Practical work: Collect suitable materials (warm water, wet washing cloth) and each individual pupil clean the ears. Discussion: In small groups discuss about the most common ears' diseases and their causes
– Describe the structure of the human eye – Explain the anatomy of the	– Draw and label structure of human eye – Recognize	– Show awareness about the importance of the eye and its role in the human being	**<u>THE EYE</u>** Identification of the parts of eye – Three main layers. – Internal chambers.	❖ Observation: Under teacher's guidance, learners observe on the wall chart and name different parts of the eye then draw the same in their exercises book

human eye – List the eye defects – Explain how to correct eye defects Explain the prevention of eye defects	different eye defects and explain how to correct them – Apply techniques of prevention from the most common eye	life – Be sensitive to anything that may affect the eye health – Display the habit and reflex of protecting one's eye against all potential dangers that may affect the eye – Develop habit of consulting a physician both for prevention and treatment of possible eye defects	– Specific eye function – Disorder of eye/ eye defects – Correction of eye defects – Prevention of eye defects	– Discussion: In small groups use the picture (diagram/ drawing) and refer to their own eyes to discuss the functioning of the eye, then share with the whole class. – Investigation: In small group learners investigate the conditions which ease or harden the sight (seeing things) – Demonstration: Learners to visualize things through different types of lens to understand how lens can be used as ways of correcting eye defects – Research: As a kind of homework, learners search for information from various sources (parents, peers, nearest health facilities, printed materials, electronic sources,) about the prevention of eye defects and later share information with peers in classroom.
Links to other subjects: *Biology: sensory organs*				
Assessment criteria: *Presentation of output from group research and discussion, hygiene of sensory organs*				
Materials: *Lens, wall charts, objects to produce sound or to taste.*				

Topic Area: The Human Body				
P4, SET	**Unit 13: Human skeleton**			**Number of periods: 13**
Key unit Competence: To describe the human skeleton and explain its functions and maintenance				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify the main parts and major bones of the human skeleton. – Explain the functions of the skeleton State the main types of bone fractures. – Explain how to deal with bone accident. – Name and explain most common bone diseases and deformation of the vertebral column.	– Draw and label the human skeleton – Apply the knowledge to prevent the accidents of the bones. – Practice first aid in case of bone accident	– Show awareness about the importance of the skeleton in the human being body – Develop habits to avoid dangerous games – Show concern about prevention measures against skeleton accidents – Be very careful when providing first aid in case of bone accident – Develop good habit to do regular physical exercises and to have a well-balanced diet	– **Main parts and major bones of the skeleton** Major bones of the skull , major bones of the trunk, bones of legs and arms – **Functions of the skeleton:** The skeleton serves six major functions namely: Support, movement, protection., blood production, storage of minerals, endocrine regulation – **Accidents of bones** ➢ **Types of bones fracture:** Closed fractures , open fractures ➢ **First aid:** • **Immobilizing the injured area** (eg. apply a splint to support the limb – **Bone diseases:** Rickets, Bone Cancers – **Deformation of the vertebral column:** Scoliosis, lordosis, kyphosis	– Observation: Under teacher's guidance, learners observe on the wall chart and refer to their own body then name different parts of the skeleton and draw in their exercises book – Discussion: 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 – Discussion: Make group discussions to find out good practices of maintaining the skeleton and avoiding accidents – Role-play simulation: As first aid, apply a splint on an arm or leg

– Explain the hygiene of the human skeleton.		especially eating food rich in calcium. – Develop habit of consulting a physician both for prevention and treatment of possible skeleton deformation and bone diseases	– **Hygiene of the skeleton** • Getting calcium and vitamin D • Doing physical exercises – **Prevention of accidents** – **Prevention of bone diseases and deformation of the vertebral column**	– Group research on various bone diseases from library, hall charts and search engines. – Demonstration and practical: Practice some techniques of maintaining a healthy skeleton: sitting position, physical exercises, as part of hygiene.
Links to other subjects: *Biology: skeleton*				
Assessment criteria: *Location of major bones on human skeleton model/chats, maintenance of bones*				
Materials: *The human skeleton model, charts, laths, wood, hard cartons, branches and bandages*				

Topic Area: The Human Body				
P4, SET	**Unit14: Muscles**			**Number of periods: 8**
Key unit Competence: To identify and explain the functions and maintenance of muscles				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Differentiate the two main groups of muscles – List the major groups of voluntary and involuntary muscles of the human body. – Identify the major functions of voluntary muscles – Identify the accidents of muscles – Explain the prevention of muscles' accidents	– Apply techniques of maintaining tone of muscles – Provide first aid in case of muscle accident – Choose and practice appropriate exercises for maintaining specific muscle's strength	–Develop awareness of the need of keeping healthier muscles –Show the concern to the importance of physical exercises as a way to care for muscles –Develop habit of consulting a physician both for prevention and treatment of possible muscles' malfunctioning	– **Main groups of muscles** • Voluntary muscles • Involuntary muscles – **Major voluntary muscles of the human body:** Major muscles of the head , major muscles of the trunk, major muscles of legs and arms – **Functions of voluntary muscles:** Producing movement, maintaining posture, stabilizing joints. – **Accidents of muscles** (cramps,) **and first aid** (stretching, massage and drinking plenty of fluid) – **Hygiene of the muscles:** Doing physical exercises – **Prevention of accidents:** Physical exercises.	- Demonstration: 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 - Group discussion: Making group to discuss the functions of voluntary muscles Making group discussions in order to discover good practices of maintaining muscles and avoiding their accidents - Practicing the 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*				
Assessment criteria: *Location of major muscles human muscle model/chats, maintenance of muscles*				
Materials: *The human muscles model, charts*				

5.3. Science and Elementary Technology for Primary Five (P5)

5.3.1. Key Competences at the end of Primary Five

At the end of P5 the following the main competences will be achieved**:**

- Use and maintain carpentry and masonry tools
- Make simple utility objects, toys and learning materials.
- Perform Write, Browse, Turtle art and scratch activities
- Master features of the daily used water
- prepare the soil for cultivation and use fertilizers
- Practice chicken keeping
- Explain afforestation and deforestation's effects on the environment
- explain different stages of digestion and prepare a balanced diet
- Prepare how to get good harvest from labour
- Explain different stages of digestion and prepare a balanced diet.
- Practice hygiene and recognize sexual characteristics and responsible behavior
- Explore light transmission according to intensity quantity.
- Classify materials according to their properties in metals and non-metals, and calculate their density.

5.3.2. Syllabus units for Primary Five

<table>
<tr><th colspan="4">Topic Area: Tools and Object production</th></tr>
<tr><th>P5, SET</th><th>Unit 1: Carpentry tools</th><th colspan="2">Number of periods:9</th></tr>
<tr><td colspan="4">Key unit Competence: To use and maintain carpentry tools</td></tr>
<tr><td colspan="3">Learning Objectives</td><td rowspan="2">Content</td><td rowspan="2">Learning Activities</td></tr>
<tr><td>Knowledge and understanding</td><td>Skills</td><td>Attitudes and values</td></tr>
<tr><td>– Identify carpentry tools
– Explain the use and maintenance of carpentry tools
– Describe the dangers of carpentry tools and how to prevent them</td><td>– Maintain carpentry tools
– Perform the use of various carpentry tools
– Use and maintain personal protective equipment</td><td>– Practice the use carpentry tools safely
– Show the concern to the importance of the carpentry furniture production
– Show the concern to replacing the worn out parts of carpentry tools
– Show familiarity in using carpentry tools</td><td>– Carpentry tools:
Work bench, wood saw, T-square, claw hammer, mallet, plane, wood chisel, axe, screwdriver, brace, clamp/Jointer, rule, bow saw, spirit level, auger bits, table saw, shaper, spoke-shave
– Usage and maintenance of some of carpentry tools Work bench, wood saw, T-square, claw hammer, plane, axe, screwdriver, clamp, bow saw, spirit level
– Dangers of carpentry tools and security measures:
• Most dangerous carpentry tools: table saw, chisel, clamp/jointer, shaper
• Dangers: injuries
• Some security measures: Always wear personal protective equipment</td><td>– Group discussion to differentiate various carpentry tools according to their various usages
– Visiting a wood / Timber workshop and practice the usage and maintenance of carpentry tools</td></tr>
<tr><td colspan="4">Links to other subjects: Construction</td></tr>
<tr><td colspan="4">Assessment criteria: Use and maintain carpentry tools</td></tr>
<tr><td colspan="4">Materials: Work bench, wood saw, T-square, claw hammer, mallet, plane, wood chisel, axe, screw driver, brace, clamp, rule, bow saw, spirit level, auger bits.</td></tr>
</table>

Topic Area: Tools and Object production		
P5, SET	**Unit 2: Masonry tool**	**Number of periods: 7**

Key unit Competence: To use and maintain masonry tools

Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify masonry tools – Explain theuse of masonry tools – Describe the dangers of masonry tools and how to prevent them	– Maintain masonry tools – Handle properly various masonry tools	– Show the concern tothe importance of masonry work – Show the concern to replacing the worn-out parts of masonrytools – Show familiarity in using masonry tools	– **Masonry tools**: Water level, trowel, plumb line, float,meter ruler, tape measure, jointer, brick frame, wheelbarrow, T-square,shovel, hoe, brick hammer, mortar mixer, – **Usage and maintenance of some of masonry tools** Water level, trowel, plumb line, float,meter ruler, tape measure, jointer, brick frame, wheelbarrow, T-square – **Dangers of masonry tools:** injuries	– Group discussion to differentiate various masonry tools according totheir various usages – Visiting a construction sitesand practice to use and maintain some masonry tools

Links to other subjects: *Agriculture: tools*

Assessment criteria: *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 and Object production				
P5, SET		**Unit 3: Objects production**		**Number of periods: 17**
Key unit Competence: To make simple utility objects, toys and learning materials				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain how to make different play, utility and learning objects – Identify the waysof maintaining utility and learning objects produced	– Make toys, utility or/and learning objectsin sorghum straws & sticks, wood or paper – Show dexterity to makeand safely maintain play, utility and learning objects – Maintain efficiently utility and learning objects	– Be aware of learning from mistakes – try and error – Appreciate well-made play, utility and learning objects – Safely keep toys, utility andlearning objects	– **Toys:** • ***In sorghum straws & sticks***: toy bicycle, house – **Utility objects:** • ***In wood*****:** wooden spoon, hoe-handle. – **Learning materials:** **I*n paper &manilla paper:*** rhombus, parallelogram, trapezium**.** – **Maintenance of utility and learning objects:** Keeping/storing them in a dry, cool and clean place	– Collecting sorghum straws& sticks to make toys – Collecting wood, chisel, sisal, spoke-shave and sawto make utility objects – Collecting papers, manilla paper and scissor to make learning objects individually.
Links to other subjects: *Art and craft.*				
Assessment criteria: *Apply learning to safely make play, utility and learning object*				
Materials: *Variety of materials like clay, fibers, wood, thread, needle, hammer, short nail, palm leaf, papers and glue*				

Topic Area: ICT				
P5, SET		**Unit 4: Computer my friend**		**Number of periods: 12**
Key unit Competence: To use data storage devices and data sharing				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the concept of data and memory. – Describe and define data, memory and storage – Explain the concept of data sharing	– Differentiate anduse the differenttypes of storage and memory devices – Practice typing, saving and opening a document from the internal storage – Practice insertingand removing a flash disk/memory stick from the computer. – Copy a document from a flash disk to a Journal/computerand vice versa	– Appreciate the use and flexibility of external storage in a computer – Be excited on how data is kept in storage. – Communicate with others in sharing of the files and documents	**Memory, storage and data sharing** – **Data and memory** Meaning of data (roles, input text,numbers and symbols from the keyboard); meaning and roles of memory – **Examples of data and memories** • **Internal storages** Hard disk (Role, Save and open a document), RAM /ROM (Random AccessMemory / Read only memory), Role of Temporary memory. • **External storages** Memory card (role, send, save and open)**,**flash disk (role, send, save and open)**,** CD,DVD (role, open video)**,** external hard disk (role) – **Sharing a document** Send an invitation, share with theneighbourhood	– Exercises of typing a text into a computer and practice saving the text in different locations **Activity:** a short story to typein exercises on saving and retrieving information from thedifferent external storage devices. **Activity**: Draw a picture in Paint – Practice copying a file from a computer to an external deviceand vice versa **Activity**: Design an invitationto a party – Practice sharing of the files or a document with friends **Activity:** Use invitation or story – Exercises on inviting a friend, sending and receiving a document **Activity**: Use invitation

	– Practice sending and sharing saved documents.			
Links to other subjects: Art / drawing, English / stories/ invitation				
Assessment criteria: *Learners should be able to store data in different devices and manage data sharing effectively*				
Materials: *XO Laptop, CDs, DVDs, Flash disk, SD Card, Black board, chalk*				

Topic Area: ICT				
P5 SET		**Unit 5: Writing skills**		**Number of periods:9**
Key Unit Competence: To perform write activity				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Distinguish between columns and rows – Identify how to extendthe length of a columnand the height of row, and increase/ decrease the number of rows or columns – State how to implode/insert, resizeand position a photo in the write activity	– Create a table by labelling rows and columns – Insert data into a table. – Edit the table by adding or deleting columns and rows the table. – Insert pictures/ diagrams and perform editing	– Appreciate the way tables keepdata – Care for the number of rows and columns that make up the table – Appreciate the use of pictures and images in the write activity	**Insert tables andimages** – **Create tables** • Insert a table,column, row • Delete a row, columns, andtable • Add columnsand rows • Enter text in atable – **Insert Pictures/images** • Insert picturesand images • Resize andposition animage and picture • Provide textrelating to imploded image	– Individual work exercises for creating tables and typing datainto a table – Practice with deleting, adding and resizing rows and columns – Practice on inserting images and resizing photos and images – Group work on creating and editing a school News Paper. – Individual exercises on writing articles for the newspaper aboutyour community

Links to other subjects: *English, (creative writing, spelling); Kinyarwanda; Mathematics (Matrices)*
Assessment criteria: *Learners are able to correctly insert and manipulate tables and images in document using Write Activity program.*
Materials: XO Laptop

Topic Area: ICT				
P5 SET		**Unit 6: Computer research**		**Number of periods: 10**
Key unit Competence: To explore and use the Browse Activity and the use of E-mails (Sugar Interface)				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the role of using emails in real life – State all the steps involved in creating emails. – State the process of login and logout State the process of writing and sending an email – State the process of making screen shots	– Create an email account – Be able to write, send and read mails – Manipulate, navigate Browse to access the information needed. – Find and locate a work map and share the content inother activities – Analyse how to access the inbox emails	– Feel happy to have an email account – Show respect when – Sending and receiving emails to/ from different contacts. – Appreciate the risk and importance of email security. – Appreciate the content found using the browse function	– **Browse and the use ofe-mails:** – **E-mail account** • Create an email • Login and logout • Write and send anemail • Read inbox emails – **Browse activity** • Access world map • Access the Dictionary • Access the Textbooks and Storybooks • Share the content from browse	– Individual practice on creating emails, login and logout – Exercises on Writing, sending and reading emails – Activity: Email to wish your friend happy birthday – Group/pairs/ individually exercises on navigating and using the Browse Activity o Activities: Find a map of Africa, a science note plants and a story book on animals. – Exercises on accessing maps and making screenshot o Activities: Find a world map and locate the East African countries on the map by zooming and taking a screenshot. – Practice on writing and commenting on the screenshots
Links to other subjects: *Social studies (Mapwork)*				
Assessment criteria: *Learners are able to correctly explore and use the Browse Activity and the use of E-mails*				
Materials: *XO Laptop, internet connection*				

Topic Area: ICT				
P5, SET	**Unit 7: Programming for Children**			**Number of periods: 22**
Key unit Competence: To perform arithmetic operations, draw geometric shapes (parallelogram, rhombus, trapezium,regular polygons) using Turtle Art Activity and create dialogue and cartoons using Scratch Activity.				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain how tutle art canbe used to draw geometric shapes. – Identify and associate different turtle instruction in order to perform calculations (arithmetic operations) – Match a sprite with the meaning of the topic – Associate different commands to make adialogue/ cartoon	– Observe and correctly practice the turtle art instructions Choose the correct instructionsneeded to produce a geometric shape – Construct and produce different geometric shapes using turtle art instructions Perform addition, subtraction,multiplication and division using turtle instructions Practice and manage correctlythe components of scratch window – Create a dialogue matching the sprite Design cartoon/ Dialogue by combining the background and sound accordingly. – Select the sprite and associateit with the background	– Conceptualize the ICT contribution in the real life – Express the desireto draw more colourful drawingsusing turtle art commands – Appreciate the way of expressingthe ideas through projects – Be confident about the process of creating dialogues and cartoons – Be proud to arrange commandsand produce animations	– **Drawing geometric shapes** – **Regular shapes:** Parallelogram, rhombus, trapezium, regular polygons – **Arithmeticoperations** Addition, subtraction, multiplication, division – **Create dialogue and cartoons** Spriting (paint, import, camera)**,** commands and speeches**,** organization**,** background setting (paint, import,camera)**,** sound settings (record,	– Group discussion on calculating areas and perimeters of the regular shapes – Practice drawing regular shapes by sequencing the blocks correctly – Individual work to perform calculations (arithmetic operations) – In Pairs or individually work on exercises to createdialogues 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.

			import)	
Links to other subjects: *Mathematics, Social studies*				
Assessment criteria: *Learners can be able to Perform arithmetic operations, Geometric shapes drawings (parallelogram, rhombus, trapezium, regular polygons) and Creation of dialogue and cartoons using Scratch Activity*				
Materials: *XO Laptop, Black board, chalk*				

Topic Area: Our environment				
P5, SET		**Unit 8: Water**		**Number of periods: 16**
Key Unit Competence: To purify water for drinking and explain dangers of polluted water				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the importance of water – List various sources of water – Identify properties of water – Explain the components of water cycle – Explain the effects of rain water – Identify the dangers of rain water and how to prevent them – Explain methods of protecting the environment	– Make a simple water filter – Produce drinking water through filtration, chemical treatment and boilingwater – Draw a simple watercycle	– Develop positive attitude to the environment and protection of water sources from pollutants – Appreciate the importance of water hygieneas a way to prevent diarrheal diseases – Appreciate the need for good habit tokeep and conserve clean water.	– **Identification of importance of water** • as human food • in sanitation • in farming • in industries – **Identification of sources of water** • Natural sources of water • Man-made sources of water. – **Identification of properties of water** • Rain water • Water cycle • Effects of rain water: *Positive effects* *Negative effects* • Methods of protecting the environment from rain water: *Planting trees* *Making terraces* *Making ditches*	– Group discussion to identify the importance of water; – Field visits and group discussionsto identify various sources of water; – Investigation to discover theproperties of water; – Investigation to discover a simplewater cycle (boiling water and cooling the vapour); – Field visits and group discussionsto outline **effects of rain** water on the environment – Field visits and group discussionsto outline the methods of protecting the environment from rain water – Plant trees and make ditches in the school surrounding

from rain water – State sources of water pollution – Explain dangers of polluted water – Identify and differentiate methods of water purification – Explain different water storage techniques	-Plant trees and make ditches as methods of protecting environment from rain water	– Practice waysto 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	*Cultivating anti erosive plants* • Identification of water pollutants • Dangers of water pollution • Prevention of water pollution – **Water purification methods** • Boiling of water, • Filtration of water, • Chemical treatment of water (e.g. chlorination) – **Making a water filter** Using small gravel, clean sand, coarse sand, charcoal, clean cotton tissue, paper filter, beaker and plastic bottle – **Water storage** • Portable water for drinking Water for general purpose use.	– Plant anti-erosive plants in the school garden – Visiting various sources of water to identify water pollutants – Group discussions to identify the dangers of water pollution and ways of preventing it water pollution – Group discussions aiming to identify the water purification methods; – Performing experiments of purification of water: • Boil water to get drinking water • Use a chemical treatment method to purify water for drinking – Make a water filter and practice its utilisation (filtration) – Discuss ways of storing water – Role play: • Diarrhea knockdown • Don’t throw it into the sea • Water relay
Links to other subjects: *Social studies, chemistry, agriculture and geography*				
Assessment criteria: *Purified water for drinking and school environment protected from rain water*				
Materials: *water, chemicals for water treatment, small gravel, clean sand, coarse sand, charcoal, clean cotton tissue, paper filter, beaker and plastic bottle*				

Topic Area: Our environment				
P5, SET		**Unit 9: Soil**		**Number of periods: 15**
Key unit Competence: To prepare the soil for cultivation and use fertilizers				
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 – Identify the typesof fertilizers	– Prepare the soil for cultivation – Select fertilizers – Prepare organic fertilizers – Proper useof fertilizers	– Respect the sequence of steps of preparation of soil for cultivation – Develop positive attitude towards the use and care of fertilizers – Appreciate the importance of fertilizers in our environment – Show concern for dangers of the baduse of fertilizers and its effects on crops production and plant health	– **Preparation of soilfor cultivation:** • Land clearing, Ploughing, • Primary cultivation (ploughing), Second cultivation (harrowing) • Levelling (seed bed preparation). – **Fertilization soil for cultivation** • Types of fertilizers *organic* and c*hemical manures* • Importance offertilizer • Rules of applying fertilizers • Use organic manure before using artificial fertilizers • Always choose the appropriate fertilizer for each crop • Respect the dose	– Practical and hands-on activity: In the school garden, preparing plots where tocultivate vegetables: – Clear bush and other vegetation from soil, dig the soil, break the soil and turn it over, remove weeds, burry other organic matter, add manure (and eventually chemical fertilizers) to the soil to enrich it, spread manure and / or chemical fertilizers, remove stones and other wastes from the plot,level the plot using a rake, plant seeds – Practical group work: Assign to each toprepare one type of organic manures – Investigation on the effect of a specific type of fertilizer on the plant growth (This can be a long term project done bya group who will choose its own type of investigation). After a certain period of time, each group is asked to report and present the results of their project. – Group work: Carry out research on precautions during the use of fertilizer

Links to other subjects: *Agriculture: soil properties*				
Assessment criteria: *Good preparation of soil for cultivation and use of fertilizers*				
Materials: *Agriculture tools, manure and fertilisers*				

Topic Area: Our environment				
P5, SET		**Unit 10: Animals**		**Number of periods:15**
Key unit Competence: To explain and practice effective chicken farming				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify the conditions of agood chicken house – Explain types of chicken breeds – Identify steps of chicken reproduction – Explain the proper feedingof chicken – Identify the most common diseases of chicken and the ways of their prevention – Explain the importance of practicing chicken farming	– Prepare a smallscale poultry farming project – Apply techniques of poultry farming	– Show interest inpoultry farming – Appreciate the socio-economic value of poultry farming – concern to own a chicken farm as wayto increase meat andeggs production as well as solving economic problems	– **Conditions of good chicken house** – **Types of breeds** The egg laying breeds, the meat- type of chicken, the dual purpose typeof chicken. – **Reproduction of chickens:** Laying eggs, incubation (brooding) of eggs: natural brooding and artificial brooding, egg hatching – **Proper feeding of chickens** – **Chicken diseases** Parasitic diseases: coccidiosis, ascarids infectious disease*:* salmonella, infectious bronchitis – **Prevention of chicken diseases**Keep chickens clean, disinfect the coop, quarantine chicken, if necessary, vaccinate chickens for problematic diseases	– Field visits of different chicken farms, make observations and group discussions to outline the conditions of a good chicken house. – Group discussion aboutthe types of chicken breeds. – Research from library/ wall charts/search enginson chicken reproduction mode and group discussionand presentation of research results – Group discussion on practicing good feeding andhygiene for chicken. – Making group discussionon chicken diseases and mode of preventing them

– Explain the poultry farming process			– **Importance of chicken farming** Economical, agricultural and nutritional – **Chicken farming process**	– Making group discussion on the importance of poultry farming – Manage a small poultry farming project at school
Links to other subjects: *Agriculture: farm management*				
Assessment criteria: *Chicken farm properly managed*				
Materials: *Chickens, chicken houses, grains, greens / vegetables / weeds, proteins hard grit, calcium, salt and clean water*				

Topic Area: Our environment				
P5, SET	**Unit 11: Plants and environment**		**Number of periods: 11**	
Key unit Competence: To explain the importance of plants and deforestation's effects on the environment				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Discuss and explain the uses ofdifferent crops – Name different types of crops – Discuss and explain the uses of trees. – Discuss the meaning of afforestation – Discuss the advantages of afforestation – Define and discuss the causes and effects of deforestation	– Recognize the types of crops Organize the types of crops according to their uses Observe different uses oftrees. – Describe the causes and effects of deforestation. – Analyse different ways of maintaining trees – Apply steps of planting tress	– Show sustainable desire to protect trees. Show concern on how to fight against causes – and effects of deforestationAgree to protect and care for the – existing trees – Demonstrate the ways of taking care of trees	– **Identification of importance of plants** Human food, animal feeding, medicinal plants, cashcrops, protection of environment – **Common importance of trees on environment** Weather/ climate, protect against soil erosion, recycle air through photosynthesis (reduction of co_2 in air), shelter of wild animal and birds – **Other importance of trees** Ornamental trees, fruit trees, agroforestry trees,timber trees, fuel trees – **Effect of afforestation and deforestation onthe environment** Importance of afforestation, causes of deforestation, effects of deforestation, prevention of deforestation (conservation oftrees)	– Group discussions aiming to identify different importance ofplants. – Group discussions aiming to identify importance of trees ingeneral and on environment. – Group discussions aiming to identify the importance, causesand effects of afforestation anddeforestation. – Group discussions aiming to identify the ways of conservation of trees. – Planting trees in the school surroundings to maintain environment.
Links to other subjects: Agriculture: crops and trees				
Assessment criteria: Management of plants in the environment				
Materials: Beans, sweet potatoes, cassava, maize, sorghum, avocado, cabbage, a branch of eucalyptus, a branch of a coffee tree, tobacco leaves, branches of tea tree, mural board illustrating different crops (maize, Irish potatoes…), stem cassava, banana tree, strawberry plant, avocado tree, setaria, onion, Irish *potatoes*				

Topic Area: The Human Body				
P5, SET	**Unit 12: Digestive system**		**Number of periods:10**	
Key unit Competence: To explain different stages of digestion and prepare a balanced diet				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify major parts of the digestive system and explain their function – Explain stages of digestion – Apply hygiene of digestive system – Identify components and elementsof balanced diet. – Identify nutritional deficiency	– Recognise parts of the digestive system and their function – Discuss stages of digestion. – Apply knowledge to practice hygiene of digestive system. – Prepare a balanced diet – Recognize nutritional deficiency diseases	– Appreciate the importance of eating balanced diet in order tokeep the digestive system healthy. – Show habit to chew properly food as a way to take care of digestive system. – Show habit to recognize and prepare and eat a balance diet as a way to prevent nutritional deficiency diseases	– **Function of digestive system** Digestion and absorption – **Parts and function of digestive system:** Alimentary canal and digestive glands – **Identification of stages of digestion** Ingestion, digestion, absorption/ assimilation, elimination/ejection **Hygiene of digestion** – **Components of balance diet:** Body building food, energy-giving food and protective food – **Identification of balanced diet elements:** Carbohydrates, proteins, minerals, water, lipids and	– Observation: Individually observe the digestive system wall chart, label it and draw it inthe exercise book – Group work to discuss on the digestion process, each membertells the rest of the group how tofacilitate own digestion. – Research from library/search engines and group discussion onways of maintaining the hygieneof digestion – Collect various groups of foodand prepare balanced diet. – Group work to collect various groups of food in order to identify components of a balanced diet. – Group work to prepare and eat

diseases - Discuss how to prevent nutritional deficiency diseases			vitamins **Nutrition deficiency diseases** Kwashiorkor, marasmus, rickets, goiter, anemia **Prevention of nutritional deficiency diseases** – **Preparation of a balanced diet**	balanced diet. – Group work to observe and discuss about children suffering from deficiency diseases – Role play: Food salad-food group
Links to other subjects: *Biology (digestive system)*				
Assessment criteria: *Identification of digestion stages and composition of a balanced diet and practice of the digestion hygiene*				
Materials: *Chart, various types of food*				

Topic Area: The Human Body				
P5, SET		**Unit 13: Reproductive system**		**Number of periods:18**
Key unit Competence: To practice hygiene and recognize sexual characteristics and responsible behaviour				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the functionof human reproductive system – Identify the organsof human reproductive system – Explain the functionof human genital organs – Explain how to practice hygiene ofgenital organs – Identify sexual characteristics, changes at pubertyand responsible sexual behaviour.	– Practice adequately hygiene of external genital organs – Recognize sexual characteristics and practice principles of responsible behavior	– Show concernto care of genital organsin order to prevent diseases – Appreciate the importance to talk about questions related to genital organs – Be aware of his/her sexual characteristics and changes at puberty as a wayto practice principles of responsible	– **Human reproductive system** • Function: reproduction • Male reproductive external organ • Female reproductive external organ: vulva • **Hygiene of Female genital organs** • **Hygiene of Male genital organs** – **Primary Sexual characteristics in human** – **Puberty characteristics in girls** – **Puberty characteristics in boys** – **Safe responsible behavior:** •avoid unwanted sexual contact, •avoid unwanted pregnancy •avoid risky behaviour •Develop values and behavior based on informed awareness and knowledge •Choose good friends •Make informed choices/decisions and be aware of the consequences	– Group work to discuss function of reproductivesystem – Group discussions in order describe how to clean male and female genital organs – Group discussion on what physical changes takeplace in girls/boys – during adolescence? – Which parts of the male and female anatomy are the sameor similar? – Why do boys generally feel more comfortable than girlsabout their genitals? – Why is it important to feel comfortable touching your own genitals? – Activity: love or infatuation Game: Am I at risk?

Links to other subjects: Biology/ Reproductive system and Psychology
Assessment criteria: Behaviour in daily life
Materials: Charts, underwear

Topic Area: Energy				
P5, SET	**Unit 14: Light**			**Number of periods: 7**
Key unit Competence: To demonstrate the existence of light, explore its properties and transmission according to intensity				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Discuss and explainpropagation of light – Demonstrate the transmissionof light – Design an experiment to show reflection and refraction of light.	– Observe light propagation – Perform experiments to show transmission of light – Practice the properties of light using water and planemirror	– Pay attention to propagation of light – Classify materials according to light intensity. – Visit different areas to find out reflectionand refraction in nature.	– **Light propagation** – **Types of medium for light transmission** • Transparent, • Translucent and opaque – **Laws of lightpropagation** • Reflection of light. • Refraction of light	– Collecting cardboards,torch, to experiment on how light travels in a straight line. – Collecting different materials to investigate how the light travel through different media – Collecting different materials (water, pencil, plane mirror, to carry out experiment about reflection and refraction
Links to other subjects: *Physics(light)*				
Assessment criteria: *Application of the protocol for light propagation and transmission*				
Materials: *Variety of materials e.g. mirrors, papers, cardboards, water pencils, torches.*				

Topic Area: Energy				
P.5 SET	**Unit 1 5**: Electricity		**Number of periods: 10**	
Key unit Competence: To construct, manage an electric circuit and explain its importance				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the importance and production of electricity. – Identify sources of electricity. – Identify componentsof electric circuit. – List common tools and materials used in electricity – Explain the methods of controlling and danger of electric circuit – Explain danger of electric circuit	– Construct a simple electric circuit – Differentiate the componentsof electric circuit – Manage an electric circuit.	– Show concern to the production of electricity – Show responsibility for the safety of themselves – Justify change along with technological advancement to defend use of standard electrical component and other electronic equipment	– **Importance of electricity** – **Production of electricity** using a simple dynamo and human power – **Production of electricity** – **Common tools used in electricity,** – **Common materials usedin electricity** – **Simple electric circuit** – **Controlling electric circuit** – **Solar panel** – **Dangers of electricity**	– Field trip of area where electricity is extensively used to produce variousgoods and group discussion of the importance of electricity – Experiment on production of electricityusing a simple dynamo – Experiment on production of electricityusing a simple solar panel – Collecting materials (dry cells, bulb, wires, switches) and construct simplecircuit – Collecting materials like flat iron to practice the importance of electricity – Group discussion on the various ways of controlling electric circuit – Observing charts to mention the dangers of electricity.
Links to other subjects: *Physics*				
Assessment criteria: *Construction of an electric circuit*				
Materials: *Dry cells, wires, bulbs, electric meter, socket, tester, plugs*				

Topic Area: Materials and states of matter				
P5, SET	**Unit 16: Materials**		**Number of periods:10**	
Key unit Competence: To classify materials according to their properties in metals and non-metals, and calculate theirdensity				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify common metals. – Identify materials according to their properties Differentiate metals accordingto their properties. – State the use of metals – Name the examples of objects made	– Apply knowledgeto describe metals – Use metals safely – Recognize the properties of metals – Maintain metals safely	– Develop positive attitudeto use different metals. – Pay attentionto differentiate metals around them. – Show concern of mass and volume of	– **Classification of materials,** • Non metals • Metals – **Common metals** – **Physical properties of metals** Shiny, sonorous, good conductor of heat and electricity. – **Uses of commonmetals** – **Maintenance of metals** • Painting • galvanization)	– Collecting variety of objects: bells, a nail, piece of iron sheet, brick, plastic pens, hoe,and saucepan to group them according to their properties. – Collecting heat source, nail, and handle, tofind out that metals conduct heat. **Experiment 1: discover the density** – Measure the mass of Water, Wood, Nails, Stones, – Measure the volume of Water, Wood, metallic hummer, Stones, *Measuring the volume of irregular objects:* – Collect water in a measuring cylinder – Put different objects (e.g: stone, metallic hummer) into the measuring cylinder – Observe the volume of displaced water – Compare the mass with the volume of different materials: Water, Wood, metallic hummer, Stones. – Calculate the ratio between the measuredmass and volume of each of above objects – Compare different values of densities of

from metals. – Explain how to calculate the density and relative density ofan object – Differentiate density of regular objects from irregular objects – Justify the applications of relative density in daily life	– Apply knowledge to calculate the density and relative density of an object	surrounding objects to use them efficiently	– **Density** • Definition of density • Calculation of density • Relative density • Application of relative density	measured objects **Experiment 2: Measuring the density ofdifferent liquid materials** – Using a densmeter, measure the density of different liquids (clean water, cooking oil, paraffin, juice, milk, salty water, unclean water…) – Compare different values of densities of measured objects with the density of water ***Experiment 3*: behavior of different objectsin water and relative density** – Put different objects (paraffin, stone, cookingoil, metallic hummer, metallic plate, metallic spoons, plastic objects, sauce pan, a bottle (with lid) full of water and a bottle (with lid) full of air) in a sink/basin full of water (up to¾) – Observe and compare their behavior in water
Links to other subjects: *Physics, mathematics: calculation of density*				
Assessment criteria: *Material classification and calculating of density as well as relative density.*				
Materials: M*agnets, paper, bells, nails, plastics, brick, piece of iron sheet, hoes, plastics,*				

5.4. Science and Elementary Technology for Primary Six

5.4.1. Key Competences at the end of Primary Six

At the end of P6, the following main competences will be achieved **:**

- Use and maintain mechanics and blacksmith tools safely
- Classify simple machines and levers;
- Make toys, utility and learning objects;
- Perform Abiword, spreadsheets, search engines Turtle arts, Etoys and scratch
- Explain the phenomenon of air pollution, its consequences and management;
- Practice effective management of goats and cows;
- Describe the parts of a flower and explain the process of sexual and asexual reproduction
- Apply garbage collection techniques and separate hazardous, organic and recyclable waste materials;
- Describe and explain the functioning of the circulatory system, its hygiene and maintenance;
- Explain the mechanism of respiration;
- 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;
- Use of energy and its transformations from one form to another;
- Explain and demonstrate the existence of magnetic forces and magnetic field;
- Demonstrate and explain changes of state of matter.

5.4.2. Syllabus units for Primary Six (P6)

<table>
<tr><th colspan="5">Area: Tools and objects production</th></tr>
<tr><th colspan="2">P6, SET</th><th colspan="2">Unit 1: Mechanics and blacksmith tools</th><th>Number of periods :8</th></tr>
<tr><td colspan="5">Key unit Competence: To use and maintain mechanics and blacksmith tools safely</td></tr>
<tr><td colspan="3">Learning Objectives</td><td rowspan="2">Content</td><td rowspan="2">Learning Activities</td></tr>
<tr><td>Knowledge and understanding</td><td>Skills</td><td>Attitudes and values</td></tr>
<tr><td>– Identify and explain the uses of mechanics and blacksmith tools
– Explain the maintenance of both mechanics and blacksmith tools
– Identify potential dangers of using mechanics and blacksmith tools and ways of preventingthem</td><td>-Find out every least detail in observing mechanics and blacksmith tools
-Communication through discussions
-Match mechanics and blacksmith tools with their respective uses
-Handle mechanicsand blacksmith tools safely
-Maintain adequately mechanics and blacksmith tools</td><td>– Show concern for the importance of blacksmith tools
– Show responsibility and carrying forthe safety of him/her and others.
– Develop positive attitudes towards the environment, mechanics and blacksmith production
– Safe use of tools</td><td>The common Mechanics tools:
Mechanics’ hammer, screwdriver, open- ended spanner, pliers, hand drill, benchvice
The common Blacksmith tools
Bellows, anvil, blacksmith hammer,blacksmith’s pliers or tongs
Use and maintenance of mechanics and blacksmith tools
• Usages of mechanics / blacksmith tools
• Storage of mechanics / blacksmith tools
• Maintenance of mechanics / blacksmithtools
• Dangers of the misuse of mechanics /blacksmith tools
• Precautions when using mechanics andblacksmith tools</td><td>– In class, display a range of blacksmith tools and let learners try to name them and match them with their use
– Visit a nearest garage to gain experience on how to use mechanics tools
– Practical work about the use and care for mechanics and blacksmith tools
– Group discussion and presentation on the use and maintenance of mechanics tools, blacksmith tools and giving reasons.</td></tr>
<tr><td colspan="5">Links to other subjects: Home science</td></tr>
</table>

Assessment criteria: Use and maintain mechanics and blacksmith tools safely.
Materials: Hammer, screwdriver, open-ended spanner, pliers, hand drill, bench vice, Bellows, anvil, blacksmith hammer, blacksmith's pliers or tongs

Topic Area: Tools and Objects				
P6, SET			**Unit 2: Simple machines**	**Number of periods :10**
Key unit Competence: To classify simple machines and levers				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define simple machines – Identify different types of machines – Outline classes of levers – Categorize simple machines according to their classes – Explain the potential dangers of using of simple machines and how to prevent them	– Draw and label the different simple machines – Make patterns of simple machines and levers based on their characteristics – Safe handling of different simple machines /levers – Communicate and use appropriate terminology related to simple machines	– Show curiosity on the use of simple machines and their importance – Be aware of possible dangers of using simple machines – Display sense of responsibility when using simple machines – Appreciate the usage of simple machines as a way to simplify the daily work	– **Definition of simple machine** – **Types of simple machines**: lever, inclined planes, screws, pulleys, wedges, wheel and axle – **Safety in the use of simple machines** – **Levers** • **Definition** • **Parts of levers**: fulcrum, load and effort • **Classes of levers:** – **1st class lever**Eg: Crowbars, scissors, see-saws – **2nd class lever**Eg.wheel barrow, nutcracker – **3rd class lever** Eg. hoe, fishing load, spade, pair oftong, broom	– Differentiate a simple machine from other materials/tools – Discover the types and characteristics of simple machines – Under the guidance of the teacher, discover the different types and characteristics of levers – Group work to use simple machines according to classes to discover the position of fulcrum, load and effort – Classify different tools in classes of levers (1st, 2nd and3rd classes): wheel barrow, broom, scissor, fishing rod, spade, pair of tongs, nutcracker, crowbar

Links to other subjects: Physics
Assessment criteria: To classify simple machines and levers
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: Tools and Objects				
P6, SET		**Unit 3: Objects production**		**Number of periods :12**
Key unit Competence: To make toys , utility and learning objects				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain how to make different toys, utility and learning objects – Identify the ways of maintaining utility and learning objects produced	– To handle manipulate properly various materials to make toys, utility and learning objects – Use efficiently clay, sticks or paper to make different tools – Maintain efficiently utility and learning objects	– Show dexterity to make and safely maintain toys utility and learning objects – Be aware of learning from mistakes – try and error – Appreciate well-made toys, utility and learning objects	– **Making toys:** • **in clay:** dolls, animals • **in wires:** motorcycles – **Making utility objects in threads:** scarf, socks, hat & gloves – **Making learning materials in paper &manila paper:** regular polygons & solids – **Maintenance of utility and learning objects:** Keeping/storing them in a dry, cool and clean environment	– Collecting clay and wires to make toys objects, – Collecting threads, needle or lancelet and scissors to make utility objects, – Collecting papers, manila paper and scissors to make learning objects individually
Links to other subjects: *Home science*				
Assessment criteria: *To make play objects, utility objects and learning objects*				
Materials: *Clay, wires, threads, needle or lancelet, papers, manila paper and scissors*				

Topic Area: ICT				
P6 SET		**Unit 4: Writing skills**		**Number of periods: 17**
Key unit Competence: To perform write activity.				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes andvalues**		
- State the different elements of Gnome environment - Explain the process of creating a folder - Recall different operations doneon folders - Identify the elements of theAbiword environment - Recognize different ways ofediting and formatting text	– Manipulate the elements of Gnome window – Create folders – Differentiate between the files and the folders – Practice to create, rename, delete, move, copy and paste a file or folder – Classify and use Abiword window to produce smart text well formatted. – Practice the process of saving and opening a file saved in a given location.	– Appreciate the gnome user environment. – Show concern for keeping files inthe correct folders – Show concern of Abiword environment design – Appreciate text formatting using different colours	**<u>WORDPROCESSING.</u>** – **Identification of elements of GnomeEnvironment** • Desktop (create a folder) • Panels ✓ Top panel (use applications, places, date,network and olpc user) ✓ Bottom panel (minimize and maximize) – **Work with a document** Create , Save , open and rename existing document – **Folder management** Create, Rename, Delete, Move to, Copy to, Paste, Properties – **Identification of elements of Abiword window:** Title bar, Menu bar, Tool bar, Text area, Scroll bar, Task bar, Status bar – **Text formatting:** Font color, Font style, Font size, Underline style, Underline colour, Font face(Character), Steps to open and save	– Class exercises to create and rename a folder on the desktop – Practice selecting a program,setting date and time, connecting to the network andswitching back to Sugar interface – Exercises on how to copy a file into a folder, delete, Move, Copyand Paste a file/folder – Practice the use of Bold, Italic,Underline and apply colours to text – Individual activities on interviewing people from the community and writing a commentary on the interview. – Practicing saving and opening afile in/from different locations ○ Activity: Individually create afront page of a school

- Access and open files in different locations of a computer. - Explain the process of saving a document - Explain the role of spread sheet applications. - Identify the basic features of spreadsheet environment - Identify how to manipulate cell contents. - State how to use , manage and understand a worksheet	– Create and save a document in a worksheet. – Organise and manage entering data in a cell – Organise and use various methods to move, delete and fill data from/into cells – Manipulate a worksheet and manage columns and rows – Use basics arithmetic operations to manipulate cells data.	– Be familiar with spreadsheet environment – Be satisfied by moving through the spread sheet – Pay attention to the characteristics and use of sheets and cells	**SPREADSHEETS** – **Definition and role of Spread sheet application** – **Spread sheet environment** (Title bar, Menus, tool bar,Scroll bar, formula bar, status bar, cell, active cell, name box, formula bar, Colum heading,row heading, status bar) – **Create, save and open a workbook Cell basics** Definition, cell content, enter, select, copy paste – **Modifying columns, rows and cells** Change row height, column width Insert, delete, rows and columns – **Formatting a cell** Font, Text alignment and orientation, cell borders and fill colors, formatting numbers and text – **Worksheet Basics** Insert, delete, rename, remove, worksheet(s) – **Mathematical operations basics** (Addition, subtraction, multiplication, division)	newsletter. Using all the functions of Abiword to improve its presentation. – Exercise to explore basic features of a spreadsheet environment – Individual exercises to insert data into cells and apply indicated manipulation – Practice and apply arithmetical operations on numerical data. – Activity: Individually create spread sheet 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. Use formulas to calculate the total cost for a week and generate thecost for a year.
Links to other subjects: *English (writing an article or report) Mathematics. (basic number operations and formulae)*				
Assessment criteria: *Learners should be able to use the keyboard and touchpad (mouse) correctly, and use the special keys, and perform text formatting accurately.*				
Materials: *XO Laptops shopping lists*				

Topic Area: ICT				
P6 SET	**Unit 5: Computer Research**			**Number of periods: 11**
Key unit Competence: To explore and use search engines				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the role of Search Engine – Give examples of Search Engines by their type. – Name and compare different Search Engines usingkeyword and phrases and searching techniques	– Exploreand useSearch Engines – Categorize different Search Engines – Filter information found using a Search Engine – Evaluate information and edit and enrichthe information by copying and using a Word processing program	– Appreciate Search Engine utilization to find data and information on the internet – Desire to do more research via internet – Be aware of the risks of using the internet.	– **Introduction to search engine** Definition and role – **Search engine techniques** • Keyword searching • Phrase searching – **Types of search engines** General search engines, Meta- search engines, Science specific search engines, Social science specific searchengines, Art-Humanities specific search engines and Format specific search engines – **Example and search engines** Google (searching) , Yahoo MSN Search, Wikipedia, Netscape, Ask	– Practice on different Search Enginesto find data and information using keyword and phrase searching techniques – Exercises on classifying types of Search Engines – Practice copying and editing the results form searched information. – Activities: Using different search engines find out the populations ofSub Saharian African countries. Compare the results from different search engines. – Activity: Find out the cause of climate change. How can we slowthe process down? Compare the results from different search engines.

Links to other subjects: *Mathematics, Geometry (regular and irregular shapes) , Art (drawing techniques and use of colour)*				
Assessment criteria: *Learners are able to explore and use Search Engines*				
Materials: *XO Laptop, black board, chalk, internet connection*				

Topic Area: ICT				
P6 SET		**Unit 6: Programming for Children**		**Number of periods: 25**
Key unit Competence: To design and construct geometric shapes using Turtle Art Activity and design different projects inscratch and use Etoys Activities.				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify turtle art instruction to draw cylinder, cube, cuboids and circle – Outline and use different turtle art instructions to display sound video and text – Identify any sprite and scene with each step of project – State the steps followed to produce a project – Summarize a given story using animations – Recall examples to compute the area,	– Construct and produce different geometric shapes using turtle art instructions – Describe instructions used to display things such as text, image or video and sound. – Select a sprite that fit with the idea to develop a project – Organize background and sprites for a suitable project – Design and create cartoon animations according to the given topic	– Conceptualize the ICT contribution in the real life – Express the desire to draw more colourful drawings using turtle art commands – Show creativity for designing and creating more projects reflecting the real life experience – Support the ideas by developing a convincing project	– **Turtle Art for displaying things** Text, Numbers, Image or video, Sound – **Draw irregular polygons** Cylinder, Cube, Cuboids, Circle (Area) – **Programming animations and computing in Scratch** Scratch project – **Working with the stage** Create simple scene, Adding simple movement scripts to sprite, Donut man and Donut, Manekin dance – **Create Stories to animation** Cartoon animation in Scratch	– Organise instructions to display different images, numbers videos or texts – Practice drawing shapes and calculating their area – Individual exercises to organize multiple backgrounds – Practice to create funny games and animations – Practice carrying out different mathematical operations – Individual practice on writing Etoys books or a diary

perimeter of geometric shapes – State how to compute the sum, difference, product, quotient or average. – Identify the components of Etoys environment – Identify the steps and instructions of creating animations – Explain the steps to save, open, delete and rename a project.	– Compute and perform different calculations in scratch – Practice and use the components of Etoys window – Create Etoys books containing text, images and animations – Create and design animations – Perform saving, Opening, deleting and renaming of Etoys project – Analyze the different projects and develop criticism spirit	– Appreciate the way of expressing the ideas through projects, animations and Etoys books – Appreciate the importance of using Etoys book – Show concern of keeping projects – Be proud to arrange commands and produce animations	– **Scratch with mathematics (simple computing):** Interaction between user and program, compute with formula, computing an average and perimeter of a geometric figure – **Identification of elements of Etoys environment** Navigator bar supplies – **Etoys book** Text (story telling), drawing, animations – **Etoys Projects and Animation** Save, open, delete, rename. create animations	– Group discussion on the use of Etoys in daily life – Individual work of creating innovative projects using Etoys animation – Activity: Using turle graphics draw a house with a garden or a children's play-ground or a mountain scene or a map of your route home or a taxi or plan of your classroom. – Activity: Using etoys make a book for a two year old, or design a toy car.
Links to other subjects: *Mathematics (geometric shapes) English (creative writing), Art*				
Assessment criteria: *Learners are able to accurately design and construct geometric shapes using Turtle Art Activity and design different projects in scratch and use Etoys Activities.*				
Materials: *XO Laptop*				

Topic Area: Our Environment				
P6, SET			**Unit 7: Air pollution**	**Number of periods: 10**
Key unit Competence: To explain the phenomenon of air pollution, its consequences and management				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify air pollutants – Identify causes and dangers associated with air pollution – Explain how to protect air against air pollutants	– Recognize a polluted air – Apply the knowledge of recognizing air pollutants – Practice ways to avoid air pollutants	– Be aware of the importance of pure air – Develop positive attitude towards avoiding air pollution – To advocate against the air pollution	– **Definition of air pollution** – **Common air pollutants** – **Sources of common air pollutants** Charcoal burners, exhaust pipes, fumes from motor vehicles – **Consequences of polluted air** Causing disease to humans; death to humans; damage to other living organisms (food crops, or natural environment), global warming, acid rains, destruction of atmosphere – **Protection of air against air pollutants** Industrial sites to be put far from residential areas, proper disposal of waste material, use of air pollution control devices in industries and vehicles	– Field visit (industries or other human activities) and group discussion aiming to discover air pollutants and their sources – Group discussions on the consequences of polluted air and on the way to protect against it – Make an experiment to pollute air contained in a plastic bag using dust or fumes observe and discuss how to avoid air pollution
Links to other subjects: *Social studies: air pollution*				
Assessment criteria: *To identify air pollutants, their dangers and their management*				
Materials: C*harts, environment, industries*				

Topic Area: Our Environment				
P6, SET		**Unit 8 : Animals**		**Number ofperiods:14**
Key unit Competence: To explain and practice effective management of goats and cows				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– List the characteristics of a good cowshed/ goats shelter – Identify the types of cow/ goat breeds – Identify elements of a good diet of cattle – Explain conditions of cattle health conditions – Explain the most common cattle's diseases, their prevention and treatment – Explain the importance of cattle/goat farming	– Choose a good types of cows / goats for breeding – Apply techniques of cows / goats breeding – Use appropriate cow/ goat breeding terminology	– Show interest in cow/goat breeding – Develop awareness about the socio-economic value of cows/ goats. – Be aware of the nutritive value from livestock products	– **Characteristics of a good cowshed/ goat shelter** – **Types of cow/goat breeds** local and foreign/imported breeds – **Characteristics of cattle/goat breed to rear** – **Proper feeding of cattle** – **Cattle health sanitationconditions** – **Common diseases of cattle/goat** ▪ ***Parasitic diseases:*** East coast fever, Anaplasmosis, trypanosomiasis, pneumonia ▪ ***Infectious diseases:*** Mastitis, Anthrax – **Prevention of cow/goat diseases** – **Importance of cattle/goat farming** Economical, agricultural, social, nutritional	– Field visits of different cattle/goat farms, make observations and group discussions aiming to outline the characteristics of good cowshed/ goat shelter – Group discussion about the types of cattle/goat breeds; – Group discussion on practicing good feeding and hygiene for cattle/goat; – Practical: Manage a small scale livestock project at school – Group discussion about how to keep a flock healthy – Group discussion about cattle/goat diseases and their prevention – Group discussion about the socio-economic importance of cow/goat breeding
Links to other subjects: *Agriculture: Animal management*				

Assessment criteria: *Manage the cattle/goat farm properly*
Materials: *Cows / goats, cattle/goat houses, pictures/drawings, pots, water …*

Topic Area: Our Environment				
P6, SET	**Unit 9: Plant reproduction**		**Number of periods: 10**	
Key Unit Competence: To describe the parts of a flower and explain the process of sexual and asexual reproduction inplants				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify the reproductive parts of a flower; – Explain the processes of sexual reproduction of flowering plants – Explain the process of asexual reproduction of flowering plants – Explain reasons of plant reproduction	– Draw and label a flower – Recognize just by looking at plants and flowers those reproducing either sexually or asexually.	– Show curiosityin exploring the surrounding plants and be inquisitive – Show interestin growing different plants both at school and at home. – Value individual effort and team work inprotecting the flora.	– **Identification parts of acomplete flower:** External parts: male and female reproductive organ – **Definition of plant reproduction** – **Sexual and asexual reproduction of plants** – **Process of the sexual reproduction of floweringplants:** Pollination (and pollination agents),Fertilisation (seed production),Seed dispersal,germination **- Asexual reproduction methods:**Cutting (stem, leaves or root),grafting, layering/marcotting, suckers	– Collect different samples of flowers in the school surroundings, dissect a complete flower and observe itsparts. – Group discussion: In small groups discuss the various waysin which plants reproduce (sexual and asexual) and communicate findings. – Practical: Perform the multiplication of some plantsusing asexual reproduction techniques: • Cassava & Sweet potatoes (Stem cutting) • Avocado (Grafting) – Research using library books/search engines, group discussion of reasons of plant reproduction

			– **Reasons for plants reproduction**	
Links to other subjects: *Agriculture, Biology*				
Assessment criteria: *Identification of parts of a complete flower, steps of sexual and modes of asexual reproduction in plants*				
Materials: *various plants and flowers*				

Topic Area: Our Environment		
P6, SET	**Unit 10 : Sustainable waste management**	**Number of periods:10**

Key unit Competence: To apply garbage collection techniques and separate hazardous, organic and recyclable waste materials

Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Differentiate biodegradable from non-biodegradable types of waste – Identify different sources of waste – Cite and explain the waste management techniques	– Apply knowledge to recognize biodegradable and non-biodegradable waste in our environment – Carry out an investigation to discover different waste management techniques – Apply basic waste management technique	– Be aware of existence of inflammable / explosive / corrosive / toxic waste materials in the environment – Show concern to separate hazardous, organic and recyclable waste as away of saving the environment. – Develop positive attitude to perform professional garbage collection techniques	– **Classification of waste** (Biodegradable & Non-biodegradable): *Hazardous type*, *organic type recyclable type* – **Sources of waste:** Municipal sources of waste, medical sources of waste, agricultural sources of waste, waste from automobiles, construction sources of waste, electronic sourcesof waste , industrial sources of waste – **Waste management techniques:** Professional garbage collection, safe waste transportation, properwaste processing, maximize reuse& recycling, composting.	– Visit school surroundings to discover Hazardous, Organic and Recyclable materials – Group work and presentation on how different types of waste canbe transformed and utilized. – Group work and presentationon several sources of waste – Collect garbage around the school, discuss and apply the proper garbage collection techniques – Group work and presentation on different waste management techniques – Discuss and apply some of waste management techniques

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

Assessment criteria: *to apply garbage collection techniques and separate hazardous, organic and recyclable waste materials*				
Materials: *waste of all types (liquids/solids and/or hazardous /organic / recyclable waste materials)*				
Topic Area : The Human body				
P6, SET			**Unit 11:** Circulatory system	**Number of periods: 12**
Key Unit Competence: To describe and explain the functioning of the circulatory system, its hygiene and maintenance				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the main function of circulatory system – Describe the human circulatory system – Explain the process of blood circulation – Explain the composition of blood – Explain the hygiene of the human circulatory system – Identify the main diseases of the human circulatory system – Interpret the blood pressure measurement	– Draw and label the human circulatory system – Observe the components of the circulatory system and predict the functions of each of them – Practice hygiene of human circulatory system – Count and compare the heat beating	– Show concern about the hygieneof the circulatory system – Show awarenessof circulatory system diseases – Take care of his/her circulatory system – Develop habit of regular blood pressure check up	– **Main function of circulatory system** – **Organs of circulatory system** Heart, blood vessels – **Structure of the heart:** Right and left auricle, right and left ventricle, vena cava, pulmonary artery, aorta, pulmonary vein – **The process of blood circulation** **Blood vessels**: arteries, veins and capillaries – **Components of blood** – **Caring for our bodies and health** - **Diseases/conditions of circulatory system:** High blood pressure, heart attack, stroke, atherosclerosis, or	– Research from library books/search engine and group discussion about the main function of circulatory system – Observation of wall charts or other learning support, the circulatory system – Group discussion: The functionof the heart – Draw and discuss the functioning of the circulatory system – Group discussion on hygiene of the heart – Role play: First aid in case of external hemorrhage – Count and compare the heat beating for different persons – Field trip at a nearest health

	for different persons		hardening of the arteries and deep vein thrombosis (dvt) – **Blood pressure measurement**	center and get blood pressure tested. Discussion and interpretation of results.
Links to other subjects*: Biology: human circulatory system*				
Assessment criteria: *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 12: Respiratory system**		**Number of periods: 10**
Key Unit Competence: To explain the mechanism of respiration				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the main function of respiratory system – Describe the human respiratory system – Explain the process of respiration – Explain the care of the human respiratory system – Identify the main diseases of the human respiratory system	– Observe wall charts or human respiratory system models and describe them – Draw and label the human respiratory system – Take care of human respiratory system	– Show concern about the hygiene of the respiratory system – Show awareness of respiratory system diseases – Take care of his/ her respiratory system – Develop habit of regular health check up – Advocate against smoking	– **Main function of respiratory system** – **Identification of Organsof the respiratory system** – **Mechanism of respiration (breathing)** • Inspiration /inhaling • Expiration/ exhaling – **Good health practices and behaviors** – **Diseases of respiratory system:** Tuberculosis, cough, asthma, bronchitis, pleurisy – **Suffocation:** Definition, causes, first aidfor suffocation	– Research from library books/search engine and group discussion about the main function of respiratory system – Observation of wall charts or other learning support the respiratory system and draw it in the exercise book. – Group discussion: The mechanism of breathing – Role play: Perform an experiment to show the movement of the thorax and diaphragm during inspiration and expiration – Group discussion on various diseases of respiratory system – Group discussion about suffocation (cause, prevention and first aid in caseof suffocation) – Do experiment to show the effect of smoking: bottle experiment
Links to other subjects: *Biology, respiratory system*				
Assessment criteria: *to explain the mechanism of respiration and its maintenance*				
Materials: *wall charts, human respiratory system models, white paper, cigarette, matches box*				

Topic Area: The Human Body				
P6, SET	**Unit 13: Reproductive system**			**Number of periods: 16**
Key unit Competence: To explain the function of male and female genital organ, the prevention , transmission and treatment of STIs and HIV and state ways of preventing unplanned pregnancy				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the main function of reproductive system – Explain how boys and girls have different external and internal reproductive organs – Explain the purpose/function of external and internal male and female reproductive organs – Explain the function of human reproductive system – Describe how to prevent unplanned pregnancy – Explain the social and health consequences of an unwanted or early pregnancy; – Describe the dangers of	– Clean external genital organs regularly – Demonstrate how to use a condom to avoid pregnancy – Condom demonstration – Awareness of signs and symptoms of common – Correct and consistent use	– Show concern for the care of genital organs in order to prevent diseases – Appreciate the importance to ask questions about the genital organs – Be aware of the importance and need to abstain from sex basic methods of contraception in order to use them if required. – Be non-judgmental of people who have an STI or HIV. – Be aware of	– Main function of reproductive system – Male reproductive external organ: Scrotum, penis, testicles – Major internal parts of male genital organs: Vas deferens, seminal vesicle glands, prostate gland , urethra – Major external female genitalia vulva: – Labia major, labia minor, urethra, bartholdi's glands, clitoris. – Major internal female reproductive organs: Vagina, uterus (womb), ovaries, fallopian tubes – Preventing unplanned Pregnancy	– Research from library books/search engine and group discussion about the main function of reproductive system – Drawing and labelling the male and female reproductive systems – Entering in engine research /school library and discuss on function of major parts of the reproductive system. – Group discussion on ways of avoiding unwanted pregnancy – Games/exercises and discussion on how

procuring an illegal or unsafe abortion. – Describe common STIs – Explain the transmission, prevention and treatment of common STI and HIV – Explain basic facts about HIV and AIDS; – Analyse how to prevent and treat common STI/HIV – Explain what treatment is available for HIV and AIDS – Explain available treatment for HIV and AIDS – State how to live positively with HIV and AIDS	of condoms – Adherence and compliance with ARTs – Caring for someone with AIDS – Negotiating safer sex practices	confidentiality, avoiding stigmatizing adjudging people having STI/HIV – Explain what treatment is available for HIV and AIDS – Show concern of personal responsibility as a way to protect oneself against STIs and HIV – Show respect, and compassion toward people living with HIV – show concern about Voluntary Counseling and Testing is and its benefits – Be aware of risk reduction strategies	– Sexually transmitted infections Gonorrhoea, chancroid, syphilis, herpes simplex, candidiasis, HIV – Means of transmission of common STIs/HIV – Identification of various ways for STI s/ HIV transmission – Prevention and treatment of common STIs/HIV – Living Positively with HIV and AIDS.	STIs and HIV/AIDS are transmitted and can be prevented. – Prepare and play a sketch on how HIV is transmitted. – Demonstrate the correct use of condom – Role plays about sexual behaviour and decision-making to practice communication, negotiation and refusal skill – Group discussion about living positively with HIV and AIDS
Links to other subjects: *Biology (reproductive system)*				
Assessment criteria: *Explanations regarding 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 14: Energy management**		**Number of periods: 12**
Key Unit Competence: To understand the use of energy and its transformations from one form to another				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define the concept of energy – List the forms of energy – Explain way of energy transformation/conversion – Explain the importance of energy – Identify the main sources of energy	– Make relevant choice of the best form of energy to use – Perform basic experiments related to energy transformation – To represent in a diagram the transformation of energy in different forms	– To develop an awareness of the wise use of energy – To show concern about the consequences of the use of particular source of energy to the environment	– **Definition of energy** – **Forms of energy (and examples):** Mechanical energy, Chemical energy, Thermal (heat) energy, Electrical energy, Electromagnetic,Elastic energy – **Energy transformation/*energy conversion*:** • Thermal → Mechanical • Mechanical → Electrical • Chemical → Thermal • Chemical → Electrical • Solar→ Electrical • Electrical → Thermal • Electrical → Mechanical – **Importance of energy:** Facilitates life (movement,light, heat, plants and animals to grow, **…)**	• Research from library books/search engine and group discussion about the definition and forms of energy • Working in small groups to discuss the types of energy transformation • Field trip: Visit an installation of biogas plant, solar energy installation. Observe, record information and present later in class. • Whenever possible, visit a company of distribution of energy such as WASAC • In groups, discuss the economic impact of the use of energy • Research from library books and search engines on the different sources of energy, • Group discussions aiming to discover the existence of

– Identify and explain renewable energies and state some examples – Describe the components of a biogas and solar power installation. Explain advantages of using renewable energy.	- To maintain basic solar energy and biogas energy installation	– To do advocacy of the use of renewable energy – Be aware of the existence of renewable energy resources – Develop positive attitude towards solar power and biogas	– **Sources of energy:** Fuel (threes, charcoal, oil gas...), Hydropower, Sun, Biomass, Wind – **Renewable energy:** Energy from a source that is not washed-out when used. Examples: Sunlight, wind, rain, oceanwaves and geothermal heat wind or solar power – **Non-renewable energy:** Energy that does not renew itself at a sufficient rate. Examples: Fossil fuels such as coal, oil natural gaz,… – **Solar energy*:*** Definition, absorption and transformation by solar panel, role of battery, maintenance of solar installation, – **Use of solar energy** – **Biogas**: Definition, production, domestic uses, advantages of installing biogas plant – **Advantage of using renewable energy**	renewable energies • Visiting to observe and discuss on a biogas installation • Visiting to observe and discuss on a solar power installation • Group discussion aiming to discover advantages of using renewable energy
Links to other subjects: *Physics*				
Assessment criteria: *Explanation regarding forms, sources of energy, energy transformation, renewable energy and its importance*				
Materials: *Textbooks, charts, electrical apparatus, solar panels, wheel barrow, dry cells, fuel, wood, etc*				

Topic Area: Energy				
P6, SET			**Unit 15: Magnetism**	**Number of periods : 11**
Key unit Competence: To explain and demonstrate the existence of magnetic forces and magnetic field				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Recognise that a magnet can exert a pushor a pull; – Explain the composition of magnet – Identify the characteristic s of magnets; – Classify material according to magnetic force – Explain the types of magnets and magnetic field;	– Observe different types of magnets – Compare and classify the types of magnets, non-magnets and magnetic materials. – Make a temporary magnet	– Show curiosity in exploring uses of magnets in everyday life.	– **Types of magnets**: Natural and artificialmagnets – **Composition of magnets:** iron or steel – **Characteristics ofmagnets** – **Magnetic forcesand materials** • Magneticmaterials • Non-magnetic materials – **Definition of magnetic field** – **Magnetic compass and itsuses**	– Research from library books and search engines todiscover types of magnets, the composition of magnets and their characteristics – Experiment aiming to the classification of differentobjects in non-magnetic and magnetic materials; – Make a temporary magnet – Investigate the magnetic field using a permanentmagnet, a white sheet of paper and iron filings; – Investigating the use of magnetic compass – Make *a compass needle* using a magnetized sewing needle or safety pin, a bowl or jar, some water, and acoin-sized cross section of cork, magnetize the needle, insert the needle in the cork, float the

– List some uses of magnets in everyday objects.			– **Uses of magnets**	compass and observe. – Finding a lost needle/nail into the soil/grass.
Links to other subjects: *Physics, magnetism*				
Assessment criteria: *Demonstrate the existence of magnetic forces and magnetic field*				
Materials: *Permanent magnets, white sheet of paper, sewing needle or safety pin, a bowl or jar, some water, a coin-sized cross section ofcork, magnetic compass, iron filings, paperclips or small nails, different metallic objects, different non-metallic objects.*				

Topic Area: Materials and state of matter				
P6, SET		**Unit 16: States of matter**		**Number of periods:10**
Key Unit Competence: To demonstrate and explain changes of state of matter				
Learning Objectives			**Content**	**Learning Activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define the matter. – Identify the three states of matter (solid, liquid, gas) in terms of shape and volume. – Identify three interchangeable states of water. – State how water changes from one state to another. – State the melting point of ice, the freezing point of water and boiling point of water. – Explain the roles of evaporation and condensation in the water cycle	– Observing and compare different objects/matter in different states – To use apparatus and equipment properly. – Predict the effect of heat/cooling water on its physical appearance – Investigate the effect of heat gain or loss on the temperature and state of water and communicate findings – Recognize the changes in states of water in the water cycle.	– Show curiosity in exploring matter in the surroundings and question what they find. – Show concern for water as a limited natural resource and the need for water conservation.	– **Definition of matter** – **Identification of differences between the three states of matter** (in terms of shape and volume) – **Identification of changes between the three states of matter in water:**Melting, freezing, evaporation/boiling, Condensation – **Melting, freezing and boiling points of water** – **Changes in states of water in the water cycle** – **Transformation of states of matter:** deposition, sublimation, melting, freezing, evaporation,	– Experiment tomeasure mass and volume of different materials (including air) using appropriate apparatus. – Investigate the relationship between the augmentation and diminution of water temperature and the state of water. – Investigation and group discussion on classification of materials according to their shape and their volume – Investigate the physical change of heated ice and cooled water vapour and measure the melting point of ice, both the freezing and boiling point of water – Group discussions aiming to compare states of water in a water cycle – Investigation of changes between the three states of matter in Naphthalene/iodine due to the

			condensation	increase of temperature
Links to other subjects: *Physics, state of matter*				
Assessment criteria: *Demonstrate and explain changes of state of the mater*				
Materials: *Cooker (heater), water, ice, refrigerator, naphthalene, electronic balance*				

6. APPENDICES

Subjects and weekly time allocation for upper primary level

Subjects in Primary 4 – 6	**Weight(%)**	**Number of periods (1 period = 40 min.)**		
		P_4	**P_5**	**P_6**
1. Kinyarwanda	17	8	8	8
2. English	17	8	8	8
3. Mathematics	17	8	8	8
4. Social and Religious Studies	12	6	6	6
5. Science and Elementary Technology	13	6	6	6
6. Creative arts: Music, Dance and Drama, Fine arts and crafts	4	2	2	2
7. Physical Education and Sports	4	2	2	2
8. French	8	4	4	4
9. Co-curricula Activities	8	4	4	4
Total number of periods per week	**100**	**48**	**48**	**48**
Total number of contact hours per week		**32 hrs**	**32 hrs**	**32 hrs**
Total number of contact hours per year(39 weeks)		**1248 hours /year**		